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Model State Information System Training Program. Volume II. Instructor's Handbook for MSIS Subsystems

Cincinnati Univ, Ohio Southwestern Ohio Regional Computer Ctr

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Model State Information System
Training Program

Volume II

Instructor's Handbook

for

MSIS SUBSYSTEMS

Prepared for the

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Washington, D.C. 20460
under GSA Contract No. GS-05S-10458
Task Assignment OWS-77-01

by the

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This Instructor's Handbook is one of six prepared for the U.S. Environmental Protection Agency's Office of Drinking Water by the SouthWestern Ohio Regional Computer Center (SWORCC). Its purpose is to help instructors teach State and EPA personnel about the Model State Information System (MSIS).

This handbook was designed with the expectation that two uses will be made: 1) During on-site visits to States by the SWORCC training team, and 2) By State personnel during subsequent training within the State.

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Ellen G. Miller
Project Manager, OWS-77-01

This Instructor's Handbook is one of six prepared for the U.S. Environmental Protection Agency's Office of Water Supply by the SouthWestern Ohio Regional Computer Center (SWORCC). Its purpose is to help instructors teach State and EPA personnel about the Model State Information System (MSIS). Specific information is presented on:

- The course
- Units comprising the course
- Content of each unit
- Instructor preparation
- Recommended presentation
- Evaluation

The handbook was designed with the expectation that two uses will be made of it: 1) During on-site visits to States by the SWORCC training team, and 2) by State personnel during subsequent training within the State. Although it is felt that both content and suggested sequence of material contained herein will be optimum for most trainees, it is realized that State training needs will vary. This handbook was assembled in loose-leaf format, and the course itself was designed to be flexible. Both flexible physical format and organization will be helpful to those States that use the handbook for future training of State personnel.

The handbook has four parts: Design Criteria, Team Procedures, Course Content, and Course Reference Material. Part III, Course Content, contains the real heart of the handbook and takes a formal approach to training. It will be noted that specific goals and behavorial objectives are listed for each training unit together with self-measurement techniques and recommended achievement levels. Pre- and post- tests are used to evaluate the degree to which participants attain course goals and behavioral objectives.

Since trainees will be furnished a Participant's Handbook, the instructor should become familiar with its contents. It is intended that all trainees will use their own copy of the appropriate Participant's Handbook throughout the course, and will retain it for future reference. It is assumed that trainees will learn the most about MSIS if they take all the courses offered. However, each course was designed as a free-standing, complete entity to accommodate partial attendance by trainees.

One last introductory comment. Part I of this handbook, Design Criteria, tells how the MSIS training program evolved, but also discusses the criteria used to design the program -

assumptions, needs assessment, limiting parameters, teaching methods, and training philosophy. Familiarity with this background will increase overall understanding of this handbook and of the entire MSIS Training Program.

Table of Contents
Vol. II MSIS Subsystems

Page

- Acknowledgements ii
- Introduction iii
- Table of Contents v
- Part I: Design Criteria 1
  - Introduction 2
  - Background 2
  - Training Philosophy 3
  - Intended Used 5
  - Limitations 6
- Part II: Team Procedures 8
  - Introduction 9
  - Pre-Visit Activities 12
  - On-Site Activities 14
  - Post-Visit Activities 17
- Part III: Course Content 41
  - Introduction 42
  - Purpose 43
  - Summary of Course Content 44
  - List of Materials Needed for Course 45
  - Unit 1: MSIS Functions, Tables, & Files 46
    - Goal 46
    - Behavioral Objectives 46
    - Sequence of Events 47
    - Detailed Sequence & Instructor's Notes 48
  - Unit 2: Input Forms & Output Reports 90
    - Goal 90
    - Behavioral Objectives 90
    - Sequence of Events 91
    - Detailed Sequence & Instructor's Notes 92
  - Unit 3: User's Manual 116
    - Goal 116
    - Behavioral Objectives 116
    - Sequence of Events 117
    - Detailed Sequence & Instructor's Notes 118
  - Unit 4: Optional Material 122
  - Reproductions of Tests, Media, Exercises & Answers 123
- Part IV: Course Reference Material 212
  - Glossary 213
  - List of Abbreviations 219
  - Annotated Bibliography 221
  - Extracts from MSIS Documents 224

MODEL STATE INFORMATION SYSTEM

PART I

DESIGN CRITERIA

MSIS

INTRODUCTION

The purpose of this portion of the handbook is to convey to the user information which, though not directly concerned with course content, will aid in achieving a fuller understanding of the entire MSIS Training Program. The MSIS Training Program consists of six courses. They are:

- MSIS Overview
- MSIS Subsystems
- Data Entry
- Selection Process
- MSIS Components
- System Specifications

BACKGROUND:

The responsibility for implementing the Safe Drinking Water Act of 1974 was delegated to the Office of Water Supply (OWS) of the U.S. Environmental Protection Agency (EPA). In order to provide the States and EPA Regions with the capability to fulfill their basic responsibilities for monitoring water quality, as required by the Safe Drinking Water Act, OWS entered into a series of contracts.

The first series, with American Management Systems, Inc. (AMS) of Arlington, Virginia, resulted in both the concept of an informational system and its computerized version (the Model State Information System).

The second series of contracts was with the SouthWestern Ohio Regional Computer Center (SWORCC) of Cincinnati, Ohio. One major contract was to perform the detailed systems design, programming, testing and documentation of the computerized Model State Information System (GSA Contract No. GS-05S-10458, Task Assignment No. OWS-76-02).

Installation Plan - Phase 1, the other major contract, was identified as Task Assignment No. OWS-77-01, under the GSA Contract. The dual purposes of that task were as follows:

- Assist the EPA Regions in ascertaining the needs of the States and Regions for aid while installing the MSIS.

- Develop training packages based on Regional recommendations.

The MSIS Training Program is a direct result of this latter contract.

TRAINING PHILOSOPHY:

The SWORCC training philosophy can be stated briefly as follows: Every training program should contain five distinct phases - goal setting, needs assessment, activity planning, activity conducting and evaluation. Subsequent paragraphs will relate each of these program phases to the MSIS Training Program.

Goal Setting: The need for goals is obvious and most programs have them. Usually, however, they are stated in vague terms; as a consequence, progress toward obtaining them may be difficult to measure. In this instance the broad goal was established when the Office of Water Supply directed SWORCC to develop a training program for the MSIS. Within the training program, a specific goal has been listed for each course, and for each unit within a course.

Needs Assessment: The needs assessment phase is absolutely necessary to focus the training effort. First, it is here that information is gathered on the current training level of the population to be trained. Second, if properly designed, it gives that same population some input into decision-making on the program itself as to kind, amount and length of training. Therefore the program can be designed more nearly to suit not only the needs but also the desires of those to be trained. The resulting motivation on the part of the trainees is of subsequent benefit in enhancing transfer of training from the training environment to the job setting.

For MSIS, the needs assessment phase was accomplished through the use of Background Information Packages (BIP's) which were distributed to all States through the ten EPA Regional Offices. The information from the BIP's was used in making decisions on the type, amount, and length of training.

Activity Planning: The educational research literature was drawn upon heavily during activity planning. The finding by Dubin and Taveggia** that all teaching methods are equivalent gave complete freedom to choose a variety of instructional techniques to maintain both trainer and trainee interest. Knowles' discussion of adults and the learning environment was felt to be especially applicable to the training environment. First, he observes that an adult perceives himself to be wholly self-directed and tends to resist learning under conditions that are incongruent with this self-concept of autonomous individuality. Because of this, the learning climate should be one in which adults feel at ease and the psychological climate should be one of respect, acceptance, and support; the evaluation of learning should be free of value judgment and should focus on self-evaluation and a measurement of progress toward a goal.

Second, Knowles points out that adults, by definition, have a large volume of varied experiences available to them and that if these experiences are not used or are minimized, the adult feels rejected as a person. Here the implications point toward group discussion and practical application of the learning experience. Finally, Knowles tells us that adults have a perspective of immediacy of application of learning - a problem-centered frame of mind - and suggests that all adult learning experiences should commence by a sharing of common problems.

We concur with these research findings; they are reflected in our requirements for an adult learning environment (a large comfortable room, movable chairs, newsprint rather than blackboards, coffee, self-evaluation, etc.); recognition of valuable previous experience of trainees (small group discussion, large group discussion); and allowance for immediate application of learning (simulation, problem solving, and hands-on practice).

Activity Conducting: The activity conducting phase of a training program, though certainly always present, does seem to have been the key to the past failure of many otherwise excellent technical training programs. Mannion expressed this quite clearly during a visit to SWORCC in December, 1976. He felt that the U.S. government has had good success in the past with the development of sound technical programs, but that the failure of such programs had often been in the implementation phase. He attributed this failure to poor instructor training and poor transfer of training from the training environment to the job setting. SWORCC has strived to reduce both problems in the design of the MSIS Training Program.

The problem of instructor training was attacked directly by having the University of Cincinnati's Faculty Resource Center (FRC) conduct the necessary training. Grasha's approach to MSIS instructor training was similar to that previously found useful by the FRC with faculty at the University of Cincinnati. Essentially, a team approach was applied whereby practice sessions were held using actual MSIS training literature. Observations (audio or visual, as appropriate), were made and feedback sessions were held.

The teams formed were basically the same teams that conducted training in the field and, when possible, the FRC staff member spent 1-2 days on-location with the team during early State visits. Keeping the same persons assigned to one teaching team facilitates formulative evaluation, which is the ongoing improvement of the training program due to student feedback and trainer perceptions. Using an FRC teaching expert to help the team during its on-site visit also aids in formulative evaluation.

Goldstein speaks directly to the problem of transfer of training and lists two areas as being especially pertinent: Trainee motivation, and the similarity of training and the job environment. The SWORCC design has focused on trainee motivation during MSIS instructor training, as well as during on-site training. Knowles' comparison of pedagogy (teaching of children) with andragogy (teaching of adults) was used when designing maximally motivating content and teaching methods. Extrinsic motivations by instructors in the form of praise, encouragement, etc., was incorporated into the instructor training. The "hands-on" technique of training employed to input data to the computer employs Knowles' concept of problem-centered training and Goldstein's recommendation for similarity of job and training environment.

Evaluation: The last item in the SWORCC training philosophy, and perhaps the most troublesome, is evaluation. The training literature is of little help here since, as Goldstein points out, very few training programs are evaluated at all. Those discussions which do appear in the literature seem to concentrate on the training environment and techniques used there with little attempt to relate these techniques to job performance. The MSIS Training Program uses a simple three step evaluation process: Pre-test and post-test on the training material, and continuous evaluation of the learning process.

Some specific methods of continuous evaluation are: daily, written feedback from trainees; daily process or evaluation by the training team; use of an observor on the training team; and debriefing of the training team by the project managers.

INTENDED USE:

Perhaps the best way to convey intended use of the MSIS Training Program is simply to list the more important assumptions made. For convenience, they are listed under Trainee, Trainer, and General:

Trainee Assumptions:

1. Each trainee will not necessarily attend all MSIS training courses offered.
2. Each trainee will have a participant handbook available to him/her during the training period.
3. The number of trainees will be between five (5) and thirty (30).
4. Those attending training sessions will not know each other.

5. Persons selected to attend are responsible professionals concerned with satisfaction of problem-oriented needs.
6. Trainees will (generally) be expected to act as instructors to train other personnel in their area.
7. Trainees will need a brief data processing orientation which defines DP terminology, etc.
8. Trainees must be provided the general context of MSIS (the Safe Drinking Water Act, Regulations, etc.).
9. Those successfully completing the training (Unit, Course, MSIS Training Program) will be able to confidently apply the skills gained when returning to the job environment.

Trainer Assumptions:

1. A minimum of two trainers is available for each training session.
2. Trainers are fully qualified in both course content about and functions of MSIS.
3. Trainers are fully cognizant of and qualified in instructional techniques required to obtain a maximally effective training environment.
4. Trainers practice observation/feedback techniques to insure continuous improvement of the training process.

General Assumptions:

1. Any course, and any unit of any course within the entire MSIS Training Program, can be conducted independently with appropriate introduction to set context.
2. On-site training is conducted in each State for that State as directed by the Office of Water Supply.
3. Courses will be used by many States to train their own personnel following the on-site visit by the training team.

LIMITATIONS:

Assumptions beget limitations and it is well to end this discourse to the user by focusing his or her attention on the things that the MSIS Training Program cannot do.

It is impossible for one training program to fulfill the diverse needs of thirty or more States. This program is a prototype based on SWORCC's interpretation of the common needs of the States as expressed in the BIP's. MSIS training is tailored to specific and diverse needs as exemplified by providing a unit for optional material with each course.

MSIS is not a simple computer system. The instructor must know about MSIS and have used it to prepare for training others; this handbook alone cannot instruct the instructor. However, it does provide a framework for organizing what is to be taught about MSIS and gives brief information that will focus the instructor on major areas to be taught.

It is realized that some troublesome areas may exist. These areas of confusion must be identified and corrected by the user through observation, question, interpretation of evaluation results, or other methods.

MODEL STATE INFORMATION SYSTEM

PART II

TEAM PROCEDURES

INTRODUCTION

Purpose

The purpose of this portion of the handbook is to provide a checklist of all the actions required of the training team to insure a successful training effort. This section was written especially for use by the three-person teams that will visit States to teach water division personnel about MSIS.

States wishing to have their own personnel use these materials to train other in-State personnel may find it necessary to modify the activities listed here.

Description

Part II, Team Procedures, consists of the following sections:

- Management philosophy
- Organization
- State visit list
  - A. Pre-visit activities
  - B. On-site activities
  - C. Post-visit activities
- Policies and procedures
- Kickoff
- Warmup
- Evaluation
- Forms

These sections should provide the training team with most information needed to prepare for and report about on-site training.

Management Philosophy

The sole purpose of the MSIS Training Program is to help State and regional personnel learn about the Model State Information System, which in turn aids States and regions in monitoring the quality of public drinking water. Correspondingly, the MSIS training philosophy is to provide service and support to States and regions through a training program that moves from the general (Vol. I, MSIS Overview) to the specific (such as Vol.IV, Selection Process and Vol. VI, System Specifications). The individual who follows the progression of courses will end up with knowledge that should expedite his daily use and operation of MSIS.

The training teams are service-oriented. This means that they answer questions, teach courses, lead discussions, run workshops, and try to impart maximum knowledge about MSIS to trainees.

Service orientation also means that the teams utilize a maximum amount of two-way communication, which increases participation and a sense of ownership among trainees; that questions are encouraged at any time, for the unasked question means that subsequent teaching material will not be understood; and that the most participative teaching methods possible are used, for the trainees are professionals with valuable knowledge and insight.

In short, the MSIS training philosophy is respect--of trainees by the team; of each team member by the others. The goal is maximum knowledge learned by trainees, who will use MSIS daily. Any communication and teaching method that facilitates the goal is valid and should be tried out.

Organization

Two teams comprised of three members will train State and regional personnel in four of the six MSIS Training Program courses. Those four courses are:

- MSIS Overview
- MSIS Subsystems
- Data Entry
- Selection Process

The first course is intended for both water division and ADP personnel; the remainder were created for water division personnel. The three team members and their corresponding duties are:

1. Senior Teacher -- Handles most teaching and all administrative tasks while onsite.
2. Junior Teacher -- Handles some teaching assignments; coordinates equipment and supplies; and provides backup to the Senior Teacher.
3. Observor -- Responsible for all evaluation activities (observation of teaching methods, pre- and post-tests, exercises); keeps all written forms (evaluative and administrative).

The three team members will debrief together daily to assess the trainees' progress in learning about MSIS, and to assess the effectiveness of the teaching method. These debriefings will be recorded in the team log. Through debriefings and the team log, the team will correct its own problems, thus achieving the formulative evaluation cited in Part I. The dynamic process of performance, observation, feedback, and correction will result in continuous improvement of the training process.

State Visit List

Many steps are required of team members before, during, and after each State visit. The purpose of this set of steps is to (1) prepare the team as fully as possible for the State visit; (2) utilize resources and manpower in an economical fashion; (3) adhere to the national calendar of State visits with a maximum number of changes; and (4) provide unambiguous criteria for carrying out tasks during the State visit.

The set of steps listed below covers a training team's pre-visit activities, on-site activities, and post-visit activities. Management techniques used include checkoff lists, written reports, and meetings between the teams and the project manager.

Each list of activities contains:

1. Sequential steps

2. Who's responsible for the step

   --ST = Senior Teacher

   --JT = Junior Teacher

   --OB = Observer

   --All = Each team member

3. Explanatory comments

A. Pre-visit activities

Step	Who	Comments
1. Review all of this section	All	
2. Review Part III of each Instructor's Handbook	All	You're responsible for all course content and for answering questions.
3. Review each Participant's Handbook	All	You'll help participants better when you know what their handbooks contain.
4. Examine State visit data	All	Study the detailed information provided from the State Checklist. It will include: . Training facilities . Trainee numbers and type . Name of State training contact . Dates of visit
5. Examine prior team logs	All	Comments in team logs may help.
6. Call State water contact	ST	Verify all State data pertaining to training. Discuss facilities; get his home phone. He is the key person to aid you while onsite.
7. Prepare course modifications	All	Using State data and team logs, prepare any additions or deletions needed. Use Form 1, Course Modifications.
8. Decide on Kickoff method	All	See Kickoff, this section.
9. Decide on type(s) of warmups to use	All	See Warmup, this section.
10. Fill out a daily agenda for each course offered	All	Use Form 2, Daily Agenda.
11. Order all material from Materials Coordinator	JT	Use Form 3, Water Team Materials Inventory, with specific data for this State. Do this at least 5 working days prior to departure.
12. Check off inventory of materials received	JT	Use Form 3.
13. Hold departure briefing	All	Meet with project manager to discuss: a. Course modifications b. Course warmups c. Daily agendas

Step	Who	Comments
13. Hold departure briefing, con't	All	d. Accomodations e. Travel arrangements f. Conversations with State contact g. Policies and procedures Leave copy of Forms 1-3 with the project manager.
14. Last call to State water contact	ST	Set up time and place for first meeting

B. On-site activities.

Arrival day -- Step	Who	Comments
1. Meet with State water contact	ST	Verify with State water contact that the State Checklist is true. If any required items are not obtainable, follow steps listed on State Checklist. Annotate State Checklist for all items and their status when onsite.
	All	Visit facility if possible; modify as needed.
2. Review roster of trainees	All	Fill out Form 4, Course Roster.
3. Finalize course modifications	All	Information about trainees may require changes.
4. Finalize Warmup	All	
5. Finalize Kickoff	All	
6. Finalize daily agendas	All	Use Form 2.
7. Telephone project manager	ST	Report about onsite situation; phone office or home.
8. Copy all charts	JT	Use newsprint; write BIG so that it is clearly visible at back of room.
Day 1		
1. Go to facility at least 1 hour before start of session	All	Make last-minute changes; locate restrooms, telephones, snack bar, etc.
2. Kickoff for this State visit	ST	Stress: . Purpose of MSIS training . MSIS product of many contributors . Courses to be taught . Materials to be left for State use . Evaluation . Certificate of completion . MSIS training philosophy . Encourage questions . Introduce team
3. Get updated roster of trainees	ST	Pass around Form 4 for all to sign. Get copies made so every trainee has one for himself. Keep the master.

B. On-site activities, con't

Day 1, con't

Step	Who	Comments
4. Warmup	All	Help trainees get to know each other and feel at ease.
5. Course pre-test	OB	Pass out pre-test. Allow 10-15 minutes to fill out both Background Information and pre-test. Collect all papers. Record scores on Form 5, pre- and post-test analysis.
6. Course Content	All	Follow Part III of this Instructor's Handbook.
	OB	Record class analysis on Form 6.
7. During lunch, sign student certificates	ST	Prepare one certificate for each trainee on Roster.
8. Course post-test	OB	Pass out post-test; allow 10 minutes to complete it. Collect all papers. Record scores on Form 5.
9. Award certificates	ST	Personally award certificates to each trainee
10. Daily call to project manager	ST	By 5 p.m. Cincinnati time if possible, call project manager.
11. Team debriefing	All	Daily debriefing to cover: a. results of pre- and post-tests b. problems c. successes d. make up new observor's class analysis (form 6) for tomorrow e. observations f. recommendations (will be typed later and shared with other water team).
12. Write up daily log	Rotate	Write up points a-f in daily log, which will be turned in at end of trip.

Day 2

Repeat Day 1's steps 3-12

B. On-site activities, con't

Step	Who	Comments
Day 3		
Repeat Day 1's steps 3-12		
Day 4		
Repeat Day 1's steps 3-12		
Day 5		
Repeat Day 1's steps 3-12		
13. Give State contact set of MSIS training materials	ST	Use Form 7, Water Training Sign Off Sheet.
14. Have State Contact check off that training was completed	ST	Use Form 7.
15. Thank all local support personnel	All	Especially thank the State water contact for his/her help this week and before the visit.
Departure Day:		
1. Pack all extra material to return to Materials Coordinator	JT	Use Form 3.

C. Post-visit activities

	Step	Who	Comments
1.	Complete a Trip Summary	OB, ST	Use Form 8, Water Team Trip Summary
2.	Have team recommendations typed up from Team Log	ST	Use Form 9, Water Team Recommendations
3.	Trip debriefing	All	Meet with project manager to discuss: a. how it went 1. per trainees 2. per team b. results of evaluation c. written team recommendations d. what other teams need to know Turn in updated versions of forms 1-9 and the team log.
4.	Review Form 9, Water Team Recommendations from the other team.	ST	The other team may have recommendations you can use.

Policies and Procedures

Aside from the procedures outlined for pre-visit, on-site, and post-visit activities, the following rules apply:

1. Follow explicitly the State Checklist, Section 2.0. It contains requirements which the State must fulfill, and whether or not the requirement was promised and verified by telephone prior to the visit.

   Annotate Section 2.0. If a requirement is not forthcoming, take the steps listed in Section 6.0.

2. For other circumstances which appear to prevent carrying out training of water division personnel and cannot be resolved with the State water contact, immediately telephone the project manager. Notify the State water contact of the problem, having called the project manager, and the next steps authorized by the project manager. Carry out those steps in detail.

   In the team log, write up the problem, attempts made to resolve it with the State water contact, time and content of conversation with project manager, and authorized steps.

   Carry out each authorized step, noting all actions in team log.

3. In emergency situations (illness, crisis), call the project manager immediately; if unable to reach her, call the associate project manager at work or home, or the Director, CSD at work or home.

Kickoff

The purpose of kickoff activities is to set the desired tone for the entire State visit. The kickoff, or opening presentation, takes place first thing on Day 1.

Several items must be covered in the kickoff; they are listed more or less in their order of importance.

1. Purpose of State visit: The purpose of each State water team visit is to help State personnel learn as much as possible about MSIS. Why? So that MSIS is maximally useful to this State in meeting the requirements of the SDWA.

2. MSIS is the product of many contributors: While the history of MSIS will be covered in detail today, trainees need to know that the computer system, MSIS is the product of many contributors. It is based on the requirements of the Safe Drinking Water Act and the regulations; its form and requirements have been shaped by several agencies and groups, such as the Office of Water Supply, the Conference of State Sanitary Engineers, EPA regional personnel, and advisory groups.

   The MSIS to be installed in this State has been developed and tested by the SouthWestern Ohio Regional Computer Center, and approved by the Office of Water Supply after an intensive acceptance test at COMNET.

3. MSIS training philosophy: The sole purpose of the water team is to help State personnel, using a variety of methods--teaching course content, answering questions, conducting workshops where trainees practice using input forms and interpreting output reports, giving out self-measurement exercises, and administering pre- and post-tests which measure knowledge gained. The team respects the professional knowledge of trainees, and needs their comments and observations. Questions are encouraged at any time, for the unasked question means later information won't be understood.

4. Courses to be taught: While normally the water team teaches Vols. I - IV, some States have not selected all four courses. See the State Checklist, Section 2.0, for latest information. Tell the trainees what you will be teaching on what day.

5. Material left in State: OWS has authorized the SWORCC water team to leave the following training materials in each State:

   1 slide/cassette package for each of Vols. I-IV, with 2 copies of each accompanying workbook (binders 3,6,9,12).

   1 set of Vols. I - IV for training program (binders 1,2,4,5,
   1 set of camera-ready copy of binders 1-12. 7,8,10,11).

   The DP team will deliver all versions of Vols. V - VI, (binders
   camera ready copy, to the State DP contact. 13,14).

6. Evaluation: Evaluation will be performed in both formal and informal ways. Formal evaluation will be based on a pre- and post-test given for each course; papers will be collected and scored. Informal evaluation will be conducted through self-measurement exercises, which will be completed in class and discussed. The teaching team evaluates itself, relying especially on the observer's analysis of effectiveness of teaching, in daily debriefings.

7. Certificates of completion: Each trainee will receive a certificate of completion if he takes the entire course (a certificate will not be awarded if he drops in for an hour or so), to be presented at the end of the course.

8. Introductions: Introduce each team member, having them stand up. Tell their job for this week and stress that any questions anybody has may be directed to any team member at any time.

9. Summary: Stress again that the team is in this State to serve; it's goal is to help professional personnel learn as much as possible in the time allotted about MSIS, in order to make MSIS as useful as possible to the State.

Warmup

The purpose of the warmup is to set people at ease before training begins; it is also useful after a heavy lunch, or in a hot room to wake everybody up. The MSIS Training Program shows warmups as a daily, morning event, but the team may prefer another frequency. Caution: Warmups need to be selected prior to the day used!

Warmups are useful even if it appears to the team that most trainees know each other. Why? They may know each other only by name, or only in a working relationship. Warmups help the group feel at ease so it will later be confident enough to ask questions (take a risk), disagree with or challenge a teacher (stand apart from the group), or answer one another's questions (demonstrate so much ownership that they are surrogate teachers).

Types of Warmups

Warmups vary from the simple to complex. Some simple ones are discussed here. See the team copy of Davis and McCallon, Workshops: Planning, conducting, and evaluating, p. 147-149 for more complex warmups.

1. "Who are you?". Have class form triads (three people). Ask each member of the triad to find out four things about another member which will be shared with the entire group as an introduction. Allow 10 minutes for conversation; then reconvene entire group and have everybody introduce one other person.

2. "Who are we?". Variation of no. 1 in which the triad seeks to find commonalities among itself. Obvious commonalities are that they work for one agency, etc. Have the group find at least one non-work commonality (sports, leisure, volunteer groups, church work) which is shared by the three.

3. "Silent puzzle". Have the class break into small groups of five persons sitting together. Give each person a few pieces of a mini-puzzle. Tell them to work together but silently to put together the puzzle. First group done gets a gold star added to the certificate of completion. Permit 10 minutes to perform.

In summary, the purpose of warmups is to help people feel at ease with one another, and therefore willing to take risks, stand out from the group, and enhance psychological ownership of MSIS. Finally, it is just nicer to work together when one feels confortable and in friendly surroundings.

Evaluation

Evaluation is performed in three basic ways in the MSIS Training Program. First, formal evaluation of trainees is accomplished through administering pre- and post-tests for Vols. I-IV. Pre- and post-tests are collected, scored, and recorded for several later analyses which will be reported to OWS. Pre- and post-tests may be found in Part III, Course Content, of this Instructor's Handbook.

Second, informal self-evaluation is performed by trainees using the exercises that accompany Vols. I-IV. Exercises are always followed by question-and-answer sessions so that trainees can discuss correct responses.

Third, the team itself continuously evaluates its performance through several mechanisms:

1. The observer's main responsibility is to analyze the effectiveness of teaching focusing especially on those areas which the teachers have specified.

2. Daily debriefings which cover trainee performance on pre- and post-tests, degree and type of trainee participation, successes, problems, and recommendations. The daily debriefings are written up in the team log.

3. Post-visit debriefings between the project manager and the team, focusing on "how it went" and recommendations for change that should be implemented in all water training.

These devices all comprise what is called "formulative evaluation" in the educational research literature, meaning that the team constantly improves its product and services.

Philosophically, MSIS relies as little as possible on formal tests for evaluation, preferring self-measurement (exercises; questions and answers). and group analysis and improvement (observer; daily debriefings; team log; post-visit debriefing with project manager). The goal is an effective teaching team that works with trainees and among its members to communicate the maximum amount of knowledge about the Model State Information System.

Forms

There are nine forms designed for more-or-less constant use by the SWORCC water teams. They are:

1. Course modifications
2. Daily agenda
3. Water team materials inventory
4. Course roster
5. Pre- and post-test analysis
6. Observer's class analysis
7. MSIS training sign off form--water team
8. Trip summary--water team
9. Water team recommendations

The forms are intended to capture information when it is fresh; we can't rely on memory to clearly delineate events six States and ten weeks ago.

All data on the forms will be used in the two final reports, one covering the history and management of OWS-77-02; the other covering effectiveness of training.

Course Modifications
(Form 1)

State: ______________ Region: ________________ Team: ________________

Course: _________________ ________________________________

Date: _________________ ________________________________

I. Proposed modifications.

Modification Number	Unit	Modification Proposed	Reason

Form 1
-2-

II. Recommendations for permanent modifications.

Modification Number	Reasons and Proof (Cite proof, such as unusually high number of questions; poor post-test scores, etc.)

DAILY AGENDA
(Form 2)

State: ____________ Region: ________________

Course: _________________________________ Date: __________________

EVENT	TIME
Break	
Lunch	
Break	
Wrap-Up	

Water Team Materials Inventory

(Form 3)

State: ___________ Region: ______________ Packer: ________________

Scheduled Date of Departure on trip: _______________ Date packed: ________________

Date of request: ____________

Name of requestor: _________________

I. Materials for teaching Vols. I-IV. (Circle binder; add numbers)

Binder Number	Number Needed	Number Packed	Number Used	Number returned to SWORCC
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				

II. Materials to be left in State

A. Trainees

Binder No.	Number Needed	Number Packed	Number Used	Number returned to SWORCC
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				

B. Materials left with State water contact

Binder No.	Number Needed	Number Packed	Number Used	Number returned to SWORCC
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				

III. Student certificates.

Number Needed	Number Packed	Number Used	Number returned to SWORCC

Course Roster
(Form 4)

State: ____________ Region: ____________ Course: ______________

Date taught: __________________

Name	Agency	Telephone Number

(copy for all trainees; keep master)

Pre- and Post-Test Analysis
(Form 5)

State: ______________ Region: __________________ Course: ___________________
Date Course given: ____________________ Observer: ____________________

A. Trainees

1. Number of trainees taking pre-test __________
2. Number of trainees taking post-test __________
3. Useable pairs of tests (basis of following data): __________

B. Trainee Scores.

Trainee ID	Pos. No.	Correct Answer	Pre-test Answer	% Pre-test Correct	Post-test Answer	% Post-test Correct	Net Change

Observer's Class Analysis

(Form 6)

State: ____________ Region: _____________ Date: ________________

Course: _____________________ Observer: _________________

I. Items requested by Senior or Junior Teacher.

Item	Tally of Occurrences	Implications

II. Communications.

Check the most appropriate point to describe each major event, taken as a whole. Insert events as needed.

	Negative class response (asleep, bored, hostile)	Some class response (some questions, a few listening)	Average class response (most listening, about 1/3 asking questions)	High class response (almost all listening, more than half asking questions)	Constant class response (all listening, asking questions, body alert.)
Kickoff	0	0	0	0	0
Warmup	0	0	0	0	0
Pre-test	0	0	0	0	0
Unit 1	0	0	0	0	0
Discussions	0	0	0	0	0
Exercises	0	0	0	0	0
Unit 2	0	0	0	0	0
Discussions	0	0	0	0	0
Exercises	0	0	0	0	0
Unit 3	0	0	0	0	0
Discussions	0	0	0	0	0
Exercises	0	0	0	0	0
Post-test	0	0	0	0	0
Course Summary	0	0	0	0	0

Additional Notes:

III. Course content.

Fill in the following information about the exercises.

Unit	Exercise Form Number	Time class took to fill out	Questions asked by class (major ones)

IV. Problems noted.

List any content, communications, facilities or other problem that should be brought to the team's attention.

V. Suggestions.

List any suggestions which may aid your team.

MSIS Training Sign Off Form

Water Team

(Form 7)

State: ____________ Region: ____________ Senior Teacher: ________________

I. The following courses, which are checked off, have been completed by the SWORCC water team in this State:

____Vol. I, MSIS Overview
____Vol. II, MSIS Subsystems
____Vol. III, Data Entry
____Vol. IV, Selection Process

II. The following materials have been turned over to this State by the SWORCC water team

Binder Number	Camera-Ready Copy	1 Duplicate
1		
2		
3		
4		
5		
6		
7		
8		

Slide/Cassette package	1st set*	Camera-ready copy (workbook only)
Vol. I		
Vol. II		
Vol. III		
Vol. IV		

Signed: ______________________________

____
Job Title

____
Agency

____
Date

* 1 copy of slides, cassettes and 2 copies each of binders 11-14.

Trip Summary
Water Team
(Form 8)

State: _________ Region: ______________ Team: ______________________

Dates in State: _____________ ___________________________

____

I. State Water Contact.

Name: _____________________________

Job Title: _________________________

Agency: ___________________________

Telephone: _________________________

II. Trainees.

Course	Total Number Attending	Number reported prior to visit
I		
II		
III		
IV		

III. Pre- and Post-Tests.

Course	Number of useable pairs	Average Net Change
I		
II		
III		
IV		

IV. State checklist.

Of ______ required items in the State Checklist, Section 2.0,

______ were provided upon arrival of the training team.

______ were provided within the first 2 days.

______ were provided after 2 days.

______ were never provided.

V. Successes.

List and briefly discuss not more than 3 high points of this State's Water Division training in MSIS.

VI. Problems.

List and briefly discuss not more than 3 problems.

VII. Other comments.

Water Team Recommendations

(Form 9)

State: ______________ Region: ____________ Team: ____________________

Dates in State: ________________ ______________________________

____

List all recommendations except course modifications (use Form 1) for both water teams to use in remaining States.

Check which categories of recommendations are covered below:

____ State Checklist

____ Materials taken to State

____ Course content

____ Part II--Team procedures

____ SWORCC support

____ UC support

____ Other: ______________________

____ Other: ______________________

MODEL STATE INFORMATION SYSTEM

PART III

COURSE CONTENT

FOR

MSIS SUBSYSTEMS

INTRODUCTION:

The purpose of Part III of the handbook is to provide the instructor with everything needed to conduct the training.

Before plunging into the details about what will be taught, two definitions are necessary.

Course:	The teaching content within individual MSIS Training Program volumes
Unit:	A section within the course: Units are logical groups of information divided into manageable periods of time

For this course, MSIS Subsystems, there are two required units and one optional unit.

Part III begins with course information. Purpose, summary of course content, and checklist of materials needed are covered.

Next come several sets of information about the two required units. The units are self-contained and complete unto themselves, facilitating variable length breaks between units, change in instructors, and ad hoc modifications. Unit information includes:

1. Goals

2. Behavioral objectives and self-measurement techniques

3. The sequence of events, which gives a snapshot of all unit activities

4. Detailed sequence of events: It painstakingly lists in double-page format each teaching topic; methods to teach it; specific slides, charts, etc. needed; and detailed instructor notes that explain the topic's contents. The detailed sequence of events was designed with space between events to allow for changes to be inserted as notes. Such additional material that cannot be inserted within the framework of a unit may be included as the instructor sees fit in the additional unit, Optional Material.

It is expected that, with repeated use, this material will be tailored to the individual style of the instructor and the needs of the particular population undergoing training. It is assumed that, as the instructor becomes more familiar with teaching this course, he will rely mainly on the detailed sequence of events to orchestrate his efforts.

The applicability of this course to each State will depend upon the specific MSIS subsystems selected by that State. It is important, therefore, for the trainer to know beforehand what subsystems were not selected and will not be used by the State so that in the presentation references to those subsystems can be eliminated or at least minimized. It is important to note, though, that although references to the subsystems not selected should be minimized, it must be made clear that the Variances and Exemptions and Enforcement Actions subsystems do contain a portion of the information required to be reported when dealing with federal reporting requirements. If either or both of those subsystems have not been selected, the information that would normally be reported by that (those) subsystem(s) will have to be prepared manually.

PURPOSE:

The purpose of this course is to attain two types of trainee goals: content and non-content. The content goals are knowledge acquisition and skill attainment. The non-content goal is attitude. The three specific goals for this course are:

Knowledge:

Trainees will know the nine individual subsystems comprising MSIS, the basic content of each, and their respective functions.

Skill:

Trainees can supervise, perform, or reference all manual processes needed to establish and maintain the nine MSIS subsystems.

Attitude:

Trainees will have a confident working knowledge of MSIS and the individual subsystems.

Goals are attained by completing behavioral objectives. The MSIS behavioral objectives specify the act which the trainee is to accomplish. Three other aspects of that accomplishment are given:

(a) Condition -- condition under which the trainee will perform this behavioral objective, such as by recall.

(b) Accuracy -- degree of accuracy which the trainee should attain: For example, 100% accuracy means that this behavioral objective is very important to learning MSIS; 50% accuracy means that the trainee need only be familiar with the knowledge.

(c) Method -- way of ascertaining whether trainee has achieved the behavioral objective: for example, written list; verbal response; writes on newsprint.

SUMMARY OF COURSE CONTENT:

Following are the units that comprise this course together with the goals, behavioral objectives, time allocation, and instructional techniques for each unit:

Unit 1: Subsystem Functions, Tables, and Files.

Goal: To give the trainees a general knowledge of MSIS subsystem functions, tables, and files.

Behavioral Objectives:

1. Name the nine MSIS subsystems.
2. Match the nine MSIS subsystems with their respective functions.
3. List the six MSIS tables.
4. Match the six MSIS tables with the subsystem that creates it.
5. Name the table which performs a given function.
6. List the eleven files.
7. Categorize the files by the type of information they maintain.

Time Allotted: Two hours and a half

Unit 2: Input Forms and Output Reports

Goal: To familiarize the trainee with all types of MSIS input forms and output reports

Behavioral Objectives:

1. List the four input form categories.
2. Specify at least two input forms per category
3. Specify the kind of output report that will supply desired information.

Time Allotted: Four hours

Unit 3: User's Manual

Goal: To give the trainee an understanding of the contents of the MSIS User's Manual.

Behavioral Objectives:

1. Reference the User's Manual to solve class problems.

Time Allotted: One hour and a half

Unit 4: Optional Material
(to be inserted as required).

LIST OF MATERIALS NEEDED FOR COURSE

Instructor Materials Required:	Unit 1	Unit 2	Unit 3	Unit 4
Instructor's Handbook (Vol. II)				
35mm slides/notes				
35mm slide projector				
Newsprint and stand				
Felt marker (large)				
Handouts				
Exercise forms				
Discussion questions				
Pre and post evaluation forms				

Participant Materials Required:	Unit 1	Unit 2	Unit 3	Unit 4
Participant Handbook (Vol. II)				
Pencils				
Note Paper				

UNIT 1: MSIS SUBSYSTEM FUNCTIONS, TABLES, AND FILES

Goal:

To give the trainees a general knowledge of MSIS subsystem functions, files, and tables

Behavioral Objectives:

1. Name the nine MSIS subsystems.
    a. Condition: From recall
    b. Accuracy: 100%
    c. Method: Written exercise
2. Match the nine MSIS subsystems with their respective functions.
    a. Condition: Given a list of subsystem names and functions
    b. Accuracy: 100%
    c. Method: Written exercise
3. List the six MSIS tables.
    a. Condition: From recall
    b. Accuracy: 50%
    c. Method: Written exercise
4. Match the six MSIS tables with the subsystem that creates it.
    a. Condition: Given a list of table names and functions
    b. Accuracy: 100%
    c. Method: Written exercise
5. Name the table which performs a given function.
    a. Condition: Given a function
    b. Accuracy: 100%
    c. Method: Written exercise
6. List the eleven files.
    a. Condition: Given three categories
    b. Accuracy: 73%
    c. Method: Written exercise
7. Categorize the files by the type of information they maintain.
    a. Condition: Given three categories
    b. Accuracy: 54%
    c. Method: Written exercise

SEQUENCE OF EVENTS, VOLUME II, UNIT 1

TIME	ACTIVITY
15	Warmup
15	Pre-test
25	Introduction of Unit
15	Slide/lecture: MSIS
40	Slide/lecture: MSIS Subsystem Function
10	Discussion
15	Exercise
30	Slide/lecture: MSIS Files
10	Discussion
10	Exercise
30	Slide/lecture: MSIS Tables
10	Discussion
15	Exercise

Total Time: 4 hours

NOTES

Text continues on following page.

DETAILED SEQUENCE OF EVENTS

The Detailed Sequence of Events is presented in double-page format in order to provide the instructor with an instant view of what is to be taught, how, and in what sequence. The column headings used are:

Event Number - The numbers under this heading represent the main unit activities and the sequence in which they should be presented.

Time - The numbers represent the planned duration of the event in minutes. These times have been tested and can be used to estimate the level of detail intended for the event.

Support Form Number - identification symbols of the materials to be used in conjunction with the presentation: These symbols also appear on the reproductions of the material inserted at the end of the unit. From left to right the digits represent the volume, the unit, the type of media, and the sequence of that media within the unit. For example, I1A3 means Volume I, Unit 1, Answer sheet number 3. The media abbreviations are defined as follows:

A - Answer sheet

C - Chart on newsprint

E - Exercise handout

H - Information handout

S - Slide

T - Test

Event & Method - recommended content and teaching approach: See Part II of this volume for general additional suggestions.

Instructor Notes - (1) Refers instructor to more detailed material in Part IV, Extracts from MSIS Documents; and (2) presents information which should either be taught or known in order to answer questions. All the material in the Instructor Notes must be mastered prior to teaching this course to feel confident during teaching.

Volume II, Unit 1

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
1	15	II.1.Cl	Warm-up . MSIS Training philosophy . What we'll do today . Roster of trainees . Agenda

Instructor Notes

For detailed discussion of warmup and kickoff activities, see Part II.

The intent of those activities is to state clearly what's to be done today, why, and how long it will take. The MSIS training philosophy of aiding States to use MSIS will be emphasized, along with the team's commitment to answering all questions that may arise.

Pass out the Roster of Trainees; have everyone sign in and return it.

Before class begins, put today's agenda on newsprint, using this example:

Today's Agenda	Date	Time
Warmup		
Pre-test		
Unit 1		
Break		
Unit 1, con't		
Lunch		
Unit 2		
Break		
Unit 2, con't		
Post-test		
Student Certificates		

Tell the trainees that all of the information presented in this course is covered in greater detail in Volume III, Data Entry; and Volume IV, Selection Process.

Volume II, Unit 1

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
2	15	II.1.T1	Pre-test

Instructor Notes

Pass out pre-test; allow 10 minutes to complete. Gather all tests.

Volume II, Unit 1

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
3	25	II.T1L	Slides and lecture: Introduction to unit . Goal . Objectives . Exercises . Agenda 1) Subsystems 2) Files 3) Tables . Data Processing Jargon

Instructor Notes

See p. 46 for goal and behavioral objectives.

Exercise sheets will be passed out during the unit; they are for trainee use, will not be graded or collected. Urge the trainees to keep them, as answers will be discussed and may be useful for further reference.

This unit covers three areas:

1. MSIS subsystems functions--the purpose and functions of each of the nine MSIS subsystems
2. MSIS files--what data is maintained by the nine subsystems in computer files, and therefore, accessible to the user
3. MSIS tables--special data needed by the subsystems and used only internally within the computer

Note that in Volume I, we distinguished between base vs. optional systems. Briefly, MSIS was offered to States in this fashion: The State would get five basic MSIS subsystems, and an additional four optional ones could be selected. Why: States might not feel they needed those MSIS subsystems. However, some of the reports required by the Regulations are prepared by those optional subsystems, meaning that States would have to prepare those reports separately.

This course deals with all nine subsystems; it is left up to the State's trainees to correlate all the subsystems with the ones it actually selected.

DP Jargon

The Model State Information System is a computer system. Thus, it is necessary to review some DP terms in order to know what's being taught. See the Glossary for the following terms, Part IV.

(Computer) Program

(Computer) System

Data Element

File

Volume II, Unit 1

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
3, con't			Slides & lecture: Introduction to unit . DP Jargon, con't

Instructor Notes

Hardware

Input

Internal

Magnetic disc

Magnetic tape

Output

Random (direct) access

Record

Report

Sequential access

Software

Subsystem

Table

Turn-around document

Volume II, Unit 1

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
4	20	II.1.S1 II.1.S29	Slides & lecture: The Model State Information System (MSIS) . Purpose . Services

Instructor Notes

Purpose

As discussed in Volume I, the Implementation Regulations for the Safe Drinking Water Act specify five reporting requirements for States taking primacy:

§ 142.15 Reports by States.

Each State which has primary enforcement responsibility shall submit to the Administrator the following information:

	Number
(a) Additions or corrections to the State's inventory of public water systems, as such additions or corrections are made if feasible, and in any event by January 1 of each year.	1
(b) An annual report to be submitted by January 1 of each year, covering the preceding Federal fiscal year ending September 30 of each year, and consisting of:	
(1) A summary of violations by public water systems in the State of the primary drinking water regulations and of enforcement actions taken by the State;	2,3
(2) A summary of the status of each variance and exemption granted by the State which was in effect during any part of the calendar year.	4
(c) Prompt notification of the granting of a variance or exemption. The notice shall include a statement of reasons for the granting of the variance or exemption, including support for the need for the variance or exemption and for the finding that the granting of the variance or exemption will not result in an unreasonable risk to health. A single notification statement may be used to report two or more similar variances or exemptions.	5
(d) The annual report submitted pursuant to paragraph (b) of this section shall be made available by a State to the public for inspection at one or more locations within the State.	

The purpose of MSIS is to maintain and analyze records so as to prepare the first four required reports. The fifth reporting requirement, prompt notification of the granting of a variance or exemption, is done separately from MSIS.

Services

MSIS offers several services to States:

1. Reduces costs of implementing the new Regulations by using a

Volume II, Unit 1

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
4, con't			Slides & lecture: The Model State Information System (MSIS) . Services, con't

centrally-developed MSIS computer system (funded by OWS).

2. Gives States local control of MSIS by operating it on a computer facility of the State's choice.
3. Produces timely and accurate reports which comply with four federal reporting requirements.
4. Provides positive control over local water suppliers' sampling, using optional sample scheduling and audit trails.
5. Optimally utilizes scarce technical personnel through priority targeting of State inspection programs.
6. Automatically monitors compliance schedules under variances and exemptions, and enforcement actions.

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
4, con't			Slides & lecture: The Model State Information System (MSIS) con't . Key features

Instructor Notes

Key Features

Finally, MSIS has several key features. First, it is a batch computer system, meaning that it operates only when batches of input data have been accumulated. The opposite is an on-line or real-time computer system, which directly inputs data to computer files, with no delay. Batch systems often use keypunched cards for input; on-line systems frequently utilize typewriter terminals.

MSIS is a management information system. This means that it maintains records and prepares reports as directed. The reports are used by States and EPA water division personnel to ascertain the quality of the States' drinking water, and to keep up to date on the status of enforcement actions, and variances and exemptions.

The combination of these two features--batch system, management information system--means that State water managers use MSIS to monitor State water quality and to prepare needed federal reports. However, the monitoring occurs after the fact, after the violation, after the violation has been reported by letter or telephone to the State. Thus, the last key feature of MSIS is that it is an after-the-fact system; collecting, maintaining, and reporting data on events which happened earlier.

Volume II, Unit 1

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
5	40		Slides & lecture: MSIS Subsystem functions . REGS . PWSI . WAQC

Instructor Notes

See Part IV for detailed information.

The functions of each subsystem, and the major purposes of its computer programs, are:

Subsystem Name	Function, Programs
Regulation (REGS)	REGS maintains a computer version of current federal regulations and sampling requirements. It also maintains State regulations. REGS has two computer programs which provide: a. a means of establishing a computer version of the State and federal regulations, and b. a printed image of the computer version.
Public Water System Inventory (PWSI)	PWSI maintains descriptive data on each community PWS in the State, such as name, address, production capacity, and water sources (surface or ground). Community PWSs should be maintained by 6/24/77. Non-community PWSs which serve transient populations, will be required to be monitored and thus maintained on PWSI two years after the effective date of the National Interim Primary Drinking Water Regulations. PWSI has 11 computer programs which: a. convert the National Inventory File to PWSI's Public Water File (PWF), and b. provide the capability of selecting records from the PWF to be printed in one of four formats.
Water Quality Compliance (WAQC)	This is the heart of MSIS. WAQC consists of 36 programs, 19 of which create reports necessary to monitor a PWS's reports on operation, sampling, and water quality.

Volume II, Unit 1

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
5, con't			Slides & lecture: MSIS Subsystem functions . WAQC, con't . FEDR . MSIS

Instructor Notes

Water Quality Compliance, con't

The major program functions, aside from report creation, are:

a. keeping records of analytical results,
b. comparing them with the REGS and PWSI to determine violations, and
c. scheduling future sampling for PWSs according to the requirements in the regulations.

WAQC tells whether or not the water supplied by a PWS for human consumption meets the specifications in the regulations.

Federal Reporting (FEDR)

FEDR prepares machine-readable information to fulfill the federal requirement concerning (1) violations, (2) changes to the State's public water system inventory, and (3) the status of variances and exemptions granted. Thus, it fulfills the three of the four requirements outlined in Section 142.15.

FEDR has two computer programs; each creates a magnetic tape file to be submitted to the EPA.

Standard Processing (MSIS)

Note: Don't confuse this MSIS subsystem with the overall system also called MSIS.

MSIS performs functions for the other subsystems which occur frequently, such as keeping history records and printing error reports.

MSIS contains five computer programs which:

a. create internal tables for use by the other subsystems,
b. print error reports,
c. maintain history files for all files except the PWF; the PWF is so large that it has its own history file module,
d. select from and print records from the history files, and
e. purge the history files.

Volume II, Unit 1

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
5, con't			Slides & lecture: MSIS Subsystems and functions, con't . SRVY . OPER

Instructor Notes	
Sanitary Survey (SRVY) con't	SRVY has two computer programs which: a. rank each of the PWS according to the State's priority for the above five criteria, b. select a State-specified number of PWS off the top of the list, and c. print those records selected on a report
Operator and Mailing (OPER)	OPER, an optional subsystem, maintains a file of names and addresses of operators and other groups. It will produce mailing labels and lists when required. OPER is made up of five computer programs which: a. create and update the Operator and Mailing file, b. select records from the file for printing, and c. print either one of two kinds of listings or mailing labels.

Volume II, Unit 1

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
5, con't		II.T2L	Slides & lecture: MSIS subsystems and functions, con't . Example

Instructor Notes

The subsystems interact with each other. The importance of the PWSI and WAQC subsystems is seen in the slides and in the following hypothetical discussion.

1. The State sets up the computer version of the regulations via the REGS subsystem upon implementation of MSIS. It also establishes the PWS inventory by converting the existing National Inventory File using the PWSI subsystem. Of course, the PWS inventory file may be updated by using the correct input form.

2. Suppose a PWS operator gets certified. The State reports it to MSIS. The PWSI is updated and he is then put on the Operator and Mailing File via the OPER subsystem.

3. Next, assume the PWS also requests from the State a variance from the fluoride MCL because the raw water source has an exceptionally high level of fluoride and the treatment technique used is the best available but still not able to bring the contamination under the MCL. The State grants the variance and establishes the PWS on the Variance and Exception File via the VAEX subsystem. The VAEX subsystem sends the information of the variance to the PWSI subsystem to use when determining violations.

4. Back at the PWS, water is sampled as required. The samples are analyzed by a certified laboratory, which reports the results to the State.

5. The State inputs the laboratory results to the WAQC subsystem. WAQC checks to see:
   (1) did a certified laboratory perform the analysis,
   (2) is the laboratory certified for this particular analysis, and
   (3) was the correct analysis method used?

6. WAQC then checks the results against the regulations in REGS subsystem. Suppose WAQC finds three violations:
   - Fluoride MCL
   - Barium MCL
   - Sampling violation

   It then checks information from the PWSI subsystem for variances and exemptions and finds that the MCL violation for fluoride is alright, but the other MCL violation and the sampling violation are not. WAQC then records the two violations, sees if check sampling requirements were met, and sets up future sampling procedures for the PWS.

7. WAQC also prints a violations report, which State personnel examine

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
5, con't			Slides & lecture: MSIS subsystems and functions, con't . Example, con't

and follow up with enforcement actions.

8. All enforcement actions are input to the ENAC subsystem; however, let us suppose an error is made in filling out an ENAC input form.

9. The error is sent by ENAC to the MSIS (Standard Processing) subsystem to be printed on a report. The State corrects the error by inputting correct data to ENAC. To help State personnel keep track of data entered to the subsystems, specified inputs to VAEX, OPER, WAQC, and ENAC are copied to the MSIS subsystem as history records. PWSI keeps its own history records.

10. Suppose the State decides that is wants to do a sanitary survey of every PWS that has had a violation. The SRVY subsystem will identify this PWS because it had two violations, as seen above.

11. At the end of the year, the violations, changes to the PWSI, (granting a variance), and the status of all variances and exemptions are input to FEDR subsystem. Thus, three reporting requirements--changes to the PWSIF and violations--are met by FEDR. The fourth requirement is fulfilled by a report on all enforcement actions taken.

In summary, MSIS helps the State keep information on PWSs, operators. laboratories, analytical results, regulation requirements, violations of those requirements, variances and exemptions, enforcement actions, and mailing lists. In addition to keeping these records, it creates needed federal and State reports.

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
6	10		Discussion
7	15	II.1.E1 II.1.A1 II.1.E2 II.1.A2	Exercises
8	30	II.1.S30 II.1.S31	Slides & lecture: Ten MSIS files . Purpose . PWF

Instructor Notes

Answer any questions of the class; ask them questions on the general flow of information, using the hypothetical model as an example.

Hand out the first exercise. Give class five minutes to fill out; ask class to give correct answers. Discuss all points fully. Then hand out second exercise, and repeat.

Purpose

The purpose of computer files is to hold together logical groups of records. Users can access files in order to print needed reports. Computer files are the same as office files, as the slides show.

Files are of critical importance because they contain the records that water division personnel will want to update and print out in order to monitor the States' drinking water quality.

There are ten MSIS files which trainees need to know about in order to use.

Ten MSIS Files

Here are the MSIS files, the subsystem that maintains them, and their functions.

File	Maintaining Subsystem	Function
Public Water (PWF)	PWSI	This file is a workhorse, telling everything you want to know about a PWS. Its records include data about PWS name, address, design capacity. The PWF can be created two ways. First, it will be automatically created from all State data now on the National Inventory File. Second, States can use input forms to put PWSs on the PWF. Data from the PWF is passed to FEDR.

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
8, con't			Slides & lecture: Ten MSIS files, con't . PWF, con't . PSF . SAF . VIF . SHF

Instructor Notes

		meeting one of the four reporting requirements which MSIS can fulfill.
Periodic Sample (PSF)	WAQC	Since we know that WAQC receives all the laboratory analyses, it makes sense that those analyses go into the PSF. After a check to see if a certified lab was used, and that the correct analysis techniques were used, the analysis data is summarized and put onto the Sample and Analyses File. Now the PSF is ready to be purged of the transferred records, [illegible] it would create too unwieldy [illegible] PSF to keep all those original transactions.
Sample and Analysis (SAF)	WAQC	We just saw that the SAF is created by the summarized sample and analysis data from the PSF. The regulations call for reporting on summaries of analyses. From the viewpoint of compliance with the regulations, the SAF is critical since it is used to determine if violations have occured of sampling, MCL, or reporting requirements.
Violations (VIF)	WAQC	All violations of the State and federal regulations are entered on the VIF. Note that WAQC maintains three files. This file provides information for federal reporting. A printed version of this file can also be used to fulfill the requirement that the State make available this information for public inspection.
Standard History (SHF)	MSIS	Recall that the Standard Processing subsystem (MSIS) services the other subsystems. It makes sense, then, that it keeps up a Standard History File which contains an account of all transactions for the rest of the files discussed here. However, there is one exception, the PWF (our workhorse file with all the PWS data)

Event No.	Time (In min.)	Support Form No.	Event & Method
8, con't			Slides & lecture: Ten MSIS files, con't . SHF, con't . DVF . VEF . EAF . OMF

Instructor Notes

		PWF is so large that it must have its own history file to keep SHF from becoming bloated.
Public History (PHF)	PWSI	Here's the one and only separate history file, to keep records on all transactions to the PWF.
Deviations (DVF)	FEDR	DVF is a file designed exclusively for federal reporting that shows all PWS violations of federal regulations. It also contains a summary of information on variances and exemptions which it obtains from VAEX. The DVF is reported to the federal government to fulfill two more reporting requirements.
Variances and Exemptions (VEF)	VAEX	VEF contains information about variances and exemptions granted and the status of PWSs in meeting the criteria set up when the variance or exemption was granted.
Enforcement Actions (EAF)	ENAC	The EAF contains records on enforcement actions taken against a PWS. A copy of this file is used to fulfill the fourth annual federal reporting requirement.
Operator and Mailing (OMF)	OPER	OMF contains the names and addresses of operators and other people to whom frequent mailings may be made. It is used to produce mailing labels and distribution lists.

Note that Part IV's list of abbreviations is also printed in the Participant Handbook; it contains all these file abbreviations and their names.

Volume II, Unit 1

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
9	10		Slides & Discussion
10	10	II.1.E3 II.1.A3	Exercise

Instructor Notes

Using the summary slides, review the files and their major purposes. Answer questions from class.

Pass out the first exercise, allow 5 minutes to complete. Discuss correct answers.

Volume II, Unit 1

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
11	30	II.1.S32	Slides & lecture: 7 MSIS tables . EMT

Instructor Notes

We just learned that files contain information that is accessible to users. You also learned that the files pass information among themselves, as directed by the subsystem programs.

Table characteristics

Tables are logical groups of records which are used internally by computer files and computer programs. Their purpose is to expedite computer processing, thus allowing MSIS programs to be run in shorter time and saving money.

Tables have certain characteristics:

1. Define codes used elsewhere: For example a table holds the full name equivalent of a two-position code for State name.
2. Validate information: For example, a table compares an incoming laboratory identification code with the list of certified laboratories.
3. Are directly accessible: Table information is generally stored on magnetic disc, which is directly available for fast computer internal processing. Saved time means saved money.
4. Once established, seldom changed: Tables contain basic information needed by files and computer programs; that basic information may be occasionally supplemented, but is always in demand as long as the system is operated.

Tables are taught because (1) they contain basic data used by MSIS--the regulations, laboratory information, values for codes, etc.-- and (2) they are occasionally updated, requiring preparation of associated input forms, some of which must be prepared by the State.

Seven MSIS Tables

Table	Maintaining Subsystem	Function
Error Message (EMT)	MSIS	EMT matches error codes passed from the other subsystems to the message that will be printed out. The EMT's data is provided with MSIS, but may be supplemented by the State.

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
11, con't			Slides & lecture: 7 MSIS Tables, con't . DET . CVT . LBT . PWT . REGS File

Instructor Notes

Table	Maintaining Subsystem	Function
Data Element (DET)	MSIS	The DET holds data element mnemonic name and catalogue number, both of which may be used when looking up a data element in the Data Element Dictionary. It also tells the location of that data element within a record. The DET is supplied by MSIS, but may be supplemented by the State.
Code Value (CVT)	MSIS	The CVT contains the valid codes used for 27 data elements some of which must be determined by the State (the regulations require that States decide some codes, such as laboratory owner type code). The CVT is used to check input data for acceptable values. A dummy CVT is supplied to each State for installing MSIS, but before the State can operate MSIS on its own, it must recreate the CVT.
Laboratory (LBT)	WAQC	This table lists those labs which have been certified, the analyses they are certified to perform, and allowable methods. A dummy LBT will be provided to install MSIS, but the State LBT must be created before operations begin.
Public Water (PWT)	PWSI	The PWT is created automatically or internally by PWSI; it contains brief information on public water systems that are frequently used.
Regulations File (RGF)	REGS	It was decided to include the RGF under tables, since it is used only by computer programs and never by the user. It contains both State and federal regulations.

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
11, con't			Slides & lecture: 7 MSIS tables, con't . REGS File, con't . CSF

Instructor Notes

Table	Maintaining Subsystem	Function
Regulations File, con't		For MSIS installation, the RGF will be provided containing the federal regulations. States do not have to put any of their own regulations into it to either install MSIS, or to operate it. However, a State may enter any regulations as long as they are more stringent than the federal regulations.
Compliance Status File (CSF)	WAQC	The CSF is also included here since it is used only internally. Its purpose is to maintain records about a PWS's past reporting and to determine future reporting requirements.

Volume II, Unit 1

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
12	10		Slide & discussion
13	15	II.1.E4 II.1.A4 II.1.E5 II.1.A5	Exercise

Instructor Notes

Use the summary slides to review the tables and which subsystems maintain them. Stress that for installation, SWORCC will supply dummy tables in order to get the system up, thus giving the State more time to prepare table data.

Hand out the exercise; proceed as usual.

UNIT II: INPUT FORMS AND OUTPUT REPORTS

Goal:

To familiarize the trainee with all types of MSIS input forms and output reports.

Behavioral Objectives:

1. List the four input form categories.
    a. Condition: From recall
    b. Accuracy: 75%
    c. Method: Written exercise
2. Specify at least two input forms per category.
    a. Condition: From recall
    b. Accuracy: 100%
    c. Method: Written exercise
3. Specify the kind of output report that will supply desired information.
    a. Condition: Given a request for information
    b. Accuracy: 75%
    c. Method: Written exercise

SEQUENCE OF EVENTS, VOLUME II, UNIT 2

	TIME	ACTIVITY
	15	Introduction of Unit
		Slides/Lecture: Input forms
	15	Processing Option
	15	Table Creation
	15	Record Creation and Maintenance
	15	Water Quality Transaction
	10	Discussion
	10	Exercises
		Slides/Lecture: Output reports
	10	Statistical-Input-Error
	15	Informational
	10	Discussion
	10	Exercises
	10	Summary
Total Time	2.5 hours	

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
1	15	II.T3L	Slides & lecture: Introduction to unit • Agenda • Goals • Behavioral objectives • Exercises

Instructor Notes

Agenda

This unit covers:

1. Input forms
2. Output reports

Only major input and output reports will be covered. Course III, Data Entry, covers the same forms in great detail, and Course IV, Selection Process, deals exclusively with preparing and using the input forms needed to obtain tailor-made reports.

Goals and behavioral objectives for this Unit are on p. 90 . Stress that review exercises are for self-measurement, and are neither collected nor graded.

Volume II, Unit 2

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
2	15	II.2.S1	Slides & lecture: Input forms . Processing option forms a) PROC b) SORT c) SEL1 d) SEL2

Instructor Notes

Processing Option Forms

There are four kinds of forms which specify processing options. Processing options are variables to computer programs which allow flexibility for the user to choose what he would like the computer to do.

PROC

The processing option form "PROC" varies slightly from program to program but the options that might be found on this form include:

1. What date will be printed on the report and what dates it will cover,
2. Whether a special file or report should be created or not, and
3. Whether to print a complete or condensed report, or no report at all.

SORT

The "SORT" processing option form is standard wherever used. On it, the user specifies the names of data elements which will be sorted. The information about each data element can be found in the Data Element Dictionary.

In addition to specifying the data elements that will be used for sorting, the user also specifies the sequence in which they will be sorted and finally, within a selected data element, the user can specify either an ascending or descending mode.

SEL1 and SEL2

The "SEL1" AND "SEL2" processing option forms are standard when used and are always used together. Their function is to specify the selection criteria the computer is to use when selecting records for a report.

On "SEL1", the user specifies the field(s) which contain(s) the information used for selection. The user also specifies a particular value or valid entry for each field which can be used as a basis for selection. Finally, the user enters the two-digit code preceding the relation symbol field on "SEL2" which will contain the symbol to be used in comparing against the data element value for selection. In specifying selection criteria it may be desired that two conditions be met in order for a record to be selected.

For example, in selecting PWSs the user may want all community PWSs that

Volume II, Unit 2

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
2, con't			Slides & lecture: Input forms . Processing option forms, con't c) SEL1, con't d) SEL2, con't

Instructor Notes

serve a population of more than 100,000 people. This is called an "and" condition because the PWS must be a community PWS and it must serve a population greater than 100,000 entities. It is also possible to want two different kinds of entities, e.g., the user may want all PWSs that either have a zip code of 11111 or 11112. This is called an "or" condition because a PWS may be selected if it has a zip code of 11111 or 11112. The "and" and "or" conditions can also be combined. For example, selection of all records that are community PWSs and serve more than 100,000 people and have a zip code of 11111 or 11112 may be desired. Complicated selections can be developed for up to 35 conditions. (Volume IV contains a detailed explanation of the selection process).

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
3	15		Input forms, con't: • Table creation forms a) Error message b) Data element c) Code value

Instructor Notes

Table Creation Forms

In Unit 1 the major aspects of tables were discussed. One of those aspects was that tables are used internally by the computer to perform its functions. Another was that once the tables were created, they change infrequently (most of the tables are supplied upon installation). However, since MSIS is designed to accomodate change, it does provide input forms and programs for changing the tables.

Error Messages

Each kind of error identified has been given a code and an error message. Error Message Table input form is used to establish the initial codes with their related messages on the EMT. When a new error is identified, it is input with this form.

Two codes may be input per keypunch card; therefore, two lines are provided for each entry. If only one error code and message is to be defined, the second line is left blank.

Data Elements

Each data element in MSIS has a mnemonic name and number. The names are called "Data Element Mnemonic Names" and the number is called a catalogue number. Each data element is also defined in terms of a description of the field it represents. The Data Element Table input form passes these definitions to the DET. The data elements are indexed on the DET by file; therefore, if a data element is used by more than one file it must be input for each file.

Code Values

Most data elements have been defined, including their acceptable values. In some cases, however, the acceptable values for a data element must be prescribed by the State, and therefore have not been predetermined. The States establish these acceptable values and their descriptions through input of the "Code Value Table input form".

Again, each data element is established with the file it relates to: if it is used by more than one file, it must be input for each file. In addition, each value and its description must be input for the data element. Therefore, if a data element is used by two files and has three different acceptable values, an entry must be made for each of the three acceptable values for the first file and then three more times for each of the acceptable values for the second file for a total of six entries.

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
3, con't			Slides & lecture: Input forms 2. Table creation forms, con't d) REGS: .MCLs -Chemical -Physical -Bacteriological -Alpha -Beta .Conditions -Bacti population size -Fluoride temperature ranges -Major beta emitters e) Laboratory Table

Instructor Notes

Part IV contains the list of code values, 27 data elements and (where applicable) their standard values.

Regulations

Basically, the Regulations input forms provide a means for the State to input its own regulations to the REGS subsystem, provided that they are no less stringent than the federal regulations. The forms are also used to input required State data.

There are eight REGS input forms; they fall into two groups. The first group deals with sampling frequencies and MCLs for the five major contaminant categories. The second group specifies conditions. The breakdown is:

A. Contaminant MCLs and sampling frequencies

   1. Chemical
   2. Physical (turbidity)
   3. Microbiological (coliform bacteria)
   4. Radionuclides -- Alpha
   5. Radionuclides -- Beta

B. Conditions:

   6. Population size for determining bacti sampling frequencies
   7. Temperature ranges for determining Fluoride MCLs
   8. Major beta emitters making up Gross Beta

Note: The monthly PWS operation reporting requirement specified in the regulations is not input to REGS since it is automatically covered in WAQC.

Laboratory Table

Input to WAQC, these forms establish a table of certified laboratories, the expiration date of their certification, the contaminant group(s) they are certified to analyze for, and the analyses methods they are certified to use. Each State must input its certified laboratories and maintain the table with these forms.

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
4	15	II.2.S2	Slides & lecture: Input forms, con't 3. Record creation and maintenance forms . Purpose

Instructor Notes

Record Creation and Maintenance

A record creation and maintenance form is the document used to put information about a particular PWS on a particular file. The form is also used to change certain information about a PWS or delete all information on a PWS.

There are a total of five record creation and maintenance forms in MSIS, although one form may be divided into parts or pages where the separate pages are assigned separate form numbers.

The principal form in this category is the PWS record creation and maintenance form. The other subsystems which require and have a record creation and maintenance form are WAQC, VAEX, ENAC, and OPER.

The remaining subsystems, (REGS, FEDR, MSIS, and SRVY) do not maintain information on PWSs as such, and therefore, do not need or have record creation and maintenance forms.

Volume II, Unit 2

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
5	15		Slides & lecture: Input forms, con't 4. Water quality transaction forms a) Sample deletion b) Chemical or radiological analysis c) Bacti or turbidity analysis d) Bacti or turbidity summary analysis

Instructor Notes

Water Quality Transactions

The water quality transaction input forms are the heart of what the whole MSIS system is all about, that is, keeping records of water quality. Although the other input forms are necessary for the maintenance and use of MSIS, these input forms provide the means of entering the principal data that MSIS is designed to maintain. They will be the forms that will probably be entered most frequently and regularly.

The four types are: sample deletion transactions, chemical or radiological analysis input transactions, bacteriological or turbidity analysis input transactions, and bacteriological or turbidity summary analysis input transactions.

The sample deletion transactions forms provide means of removing incorrect or outdated sample analysis information from the PSF and SAF.

The remaining three water quality transactions input forms are quite similar in format. Although used to input different information, all are concerned with sample and analysis data.

A good example of these forms is the chemical or radiological analysis input form. Due to the similarity of the information required, the analyses results for both contaminants can be reported on the same form.

The regulations, and therefore MSIS, provide the option of reporting bacteriological and turbidity sample and analysis data in summary form. The bacteriological or turbidity summary analysis input form provides the capability for entering that summary data into MSIS.

Volume II, Unit 2

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
6	10		Discussion
7	10	II.2.E1 II.2.A1	Exercise

Instructor Notes

Answer any questions. Review the four types of input forms, stressing their relative frequency of use.

Pass out the exercise; after the class has filled it out, discuss correct answers as usual.

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
8	10		Slides & lecture: Output reports . Purpose . MSIS output reports -Statistical -Input -Error -Informational . Characteristics of three output reports

Instructor Notes

Purpose

So far in this course, we have been concerned with how the computer did its work and received its information. Now, we are concerned with the results of that work.

The purpose of output reports is to share with the user information that has been stored and manipulated by the computer.

MSIS Output Reports

There are four categories of MSIS output reports:

1. Statistical
2. Input
3. Error
4. Informational

The first three deserve only brief mention; the bulk of our attention will be paid to informational output reports.

Characteristics of three MSIS reports

1. Statistical reports result from the updating of a file, and present the numerical facts about that update. For instance, number of records added, number of records deleted, number of records changed, number of records on the file before and after the update.
2. An input report shows what transactions were input; it provides a means for the user to verify that what was input was the same as the desired input. These reports are produced for sort options, selection criteria, table information, and water quality transactions.
3. With every input or update there is the possibility of errors, so there are error reports. There are three types of error reports:
    a. Processing options error report (standard error report)--tells what errors occurred on the PROC, SORT, SEL1 and SEL2 forms.

    b. Data entry error report--covers all other input errors; these messages begin with "Invalid", "Reject", or "Warning".

    c. The standard warning report--lists the fields of information that were omitted on input but are fields required by EPA in federal reporting. See Part IV for the EPA required data elements.

Volume II, Unit 2

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
10	15		Slides & lecture: Output reports, con't 4. Informational reports . Purpose . Representative examples: -PWS comprehensive listing and 3 subsets -MSIS history report -Compliance summary -Chemical sampling schedule

Instructor Notes

Purpose

MSIS prints out upon certain occasions pre-formatted reports. In some instances, those reports may be specifically selected by a user; in others, the programs automatically print the reports. These reports are called informational reports.

The purpose of the informational reports is to aid State water division personnel to monitor PWSs and drinking water quality. They are intended to provide useful information in a useable format.

We will discuss four representative examples of the more than 40 MSIS informational reports.

PWS Comprehensive Listing and 3 Subsets

The PWS comprehensive listing tells everything about each PWS on the Public Water File. It is a very large listing, as may be imagined when as many as 4,000 or 5,000 PWSs may be on the Public Water File. The PWS comprehensive listing includes input transactions which resulted in updating the PWF. MSIS offers three types of shorter reports containing PWS data:

1. PWS condensed listing,
2. PWS production data report, and
3. PWS discretionary data report.

MSIS History Report

This report contains a history of VEF, EAF, OMF, and VIF transactions. It provides the necessary audit trail for the State.

Compliance Summary Report

This is a key report, since it contains a record of the violations of both federal and State regulations. Do recall that only violations of federal regulations are reported annually to the federal government. This report will probably be used by the State to aid in enforcement responsibilities.

Chemical Sampling Schedule Report

This report is a good example of other reports that can be produced to list the number of samples required in a given amount of time.

It is also a turnaround document. This means that the computer printed some information on a pre-printed form; the State asked the PWS to write in addi-

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
9, con't			Slides & lecture: Output reports, con't 4. Informational reports, con't -Chemical sampling schedule, con't

Instructor Notes

Chemical Sampling Schedule Report, con't

tional information; and upon receipt, the State input the new information to MSIS.

Volume II, Unit 2

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
10	10		Summary
11	10		Discussion
12	10	II.2.E2 II.2.A2	Exercise

Instructor Notes

Summarize the main points covered:

1. 4 types of input forms and purposes
2. 4 types of output reports and purposes

Answer all questions; review briefly the four types of output reports.

Hand out the exercise and proceed as usual.

UNIT 3: USER'S MANUAL

Goal:

To give the trainees an understanding of the contents of the MSIS User's Manual.

Behavioral Objectives:

1. Reference the User's Manual to solve class problems.
   a. Condition: Give an exercise.
   b. Accuracy: 75%.
   c. Method: Workshop; one exercise for each of three groups.

SEQUENCE OF EVENTS: VOLUME II, UNIT 3

TIME	ACTIVITY
15	Introduction of Unit
10	Lecture: User's Manual
25	Exercises
25	Discussion
10	Post-test
5	Student Certificate

Total Time: 1.5 hours

Volume II, Unit 3

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
1	10		Introduction to unit . Agenda . Goals . Behavioral objectives . Exercises
2	10	II.3.H1	Lecture: User's Manual . Purpose . Key sections

Instructor Notes

Agenda

This unit will cover the major parts of the User's Manual by studying the Table of Contents. Sample copies of the User's Manual will be available to pass around, but must be returned to the team.

See p. 116 for goals and behavioral objectives.

User's Manual

The purpose of the User's Manual is to provide concise information that will aid users when operating MSIS. Since the finished volume is more than 200 pages long, it is helpful to use the Table of Contents as a discussion guide to its key sections. See the Table of Contents, II.3.H1.

Volume II, Unit 3

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
3	25	II.3.E1 II.3.E2 II.3.E3	Exercises
4	25	II.3.A1 II.3.A2 II.3.A3	Discussion
5	10	II.2.T1	Post-test
6	5		Student Certificates

Instructor Notes

Form 3 groups. Hand out one exercise to each group.

Have each group present their findings; then present answers. Answer all questions about the User's Manual, and exercises.

Hand out post-tests; collect when all are completed.

During the lunch break, have completed student certificates with student name clearly printed, and signed by the Senior Instructor with today's date. Call each person by name and either call to front of room or give out. DO NOT PASS THEM OUT IN A GROUP; give to each individual.

UNIT 4: OPTIONAL MATERIAL

(To be inserted as required).

REPRODUCTIONS

OF

TESTS, MEDIA, EXERCISES & ANSWERS

21B1
(1-4)

MSIS BACKGROUND INFORMATION

Name:________________________ Postal Code:____ Date: / / / / / ________
(5) (30) (31-32) Month Day Year
(33-38)

1. Circle which MSIS training courses you have already taken:

   (39) a. None. Go to question 2.

   (40) b. MSIS Overview

   (41) c. MSIS Subsystems

   (42) d. Data Entry

2. Have you filled out one of these MSIS Background Information forms before?

   (43) ___ Yes. Thank you for the data; go to the Pre-test.

   (44) ___ No. Go to question 3.

3. Age: ____ years (45)

4. Sex: ___ M (46) ___ F (47)

5. What was the highest level of schooling you attained? (circle one)

9 10 11 12	13 14 15 16	M.A./M.S.	Ph.D.
High School (48)	College (49)	(50)	(51)

   Other (please specify) ________________________
   (52-76)

6. Specify your major where appropriate:

________	________	________	________
College (77)	M.A./M.S. (78)	Ph.D. (79)	Other (80)

21B2
(1-4)

7. What is your job title?______________________________
(5) (30)

8. How long have you held your present position?___years ___ months
(31) (32)

9. How many years experience do you have in the general area of your present job position?

____
(33) (34)

10. Have you had training related to your present position in the past two years (other than the present MSIS training)?

(35)___No. Go to question 11.

(36)___Yes. Please answer the following:

a. What was the subject?______________________________
(37) (51)

b. What was the length of training?____________________
(52) (55)

c. Who offered the training?__________________________
(56) (65)

d. Rate your knowledge resulting from the training.

(66) None (67) A little (68) Some (69) Quite a bit

(70) Great deal

11. Please rate your current knowledge level of data processing (circle the appropriate answer).

(71) None (72) A little (73) Some (74) Quite a bit

(75) Great deal

12. Please rate your current knowledge level of the Federal Regulations pertaining to Safe Drinking Water Act of 1974 (circle the appropriate answer).

(76) None (77) A little (78) Some (79) Quite a bit

(80) Great deal

Thank you for your cooperation.

II.1.T1
21T1
(1-4)

PRE-TEST

MSIS SUBSYSTEMS

Name: ________________________ Postal Code ____ Date ____/____/____
(5-30) (31-2) Month Day Year
(33-8)

1. Circle the purpose of the Safe Drinking Water Act:

(39) a. Monitor drinking water quality
(40) b. Report to the federal government drinking water quality
(41) c. Assure the public is provided with safe drinking water

2. Circle the three phrases which describe a batch computer system:

(42) a. On-line
(43) b. Accumulates data
(44) c. Instantaneous sending of data
(45) d. Keypunch cards
(46) e. After-the-fact

3. How many subsystems does MSIS have? (47)________________________

4. Match the types of input forms with their function:
(More than one function may be appropriate)

Form	Function
a. Processing option	(48) ___Enter data to MSIS tables
b. Table creation	(49) ___Enters PWS-related data to files
c. Record creation & maintenance	(50) ___Enters sample and analysis data
d. Water quality transactions	(51) ___Enables the user to specify needed reports
	(52) ___Enables the user to specify needed PWS listing

5. Circle the correct answer. REGS, MSIS, and SRVY subsystems do not have record creation and maintenance forms because:

(53) a. they don't have any files
(54) b. they only print reports
(55) c. they don't maintain PWS data

6. Match the four kinds of output reports with the type of information each supplies:

Report

a. statistical
b. error
c. input
d. informational

Information

(56) ____What violations occurred yesterday
(57) ____Number of PWSs on the Public Water File
(58) ____What violations occurred last month
(59) ____Is the MCL for arsenic on the Regulations File correct?
(60) ____Why didn't I get the report I requested?

7. Match each subsystem with its appropriate function:

Subsystem

a. Regulations
b. Enforcement Actions
c. Water Quality Compliance
d. Public Water System Inventory
e. Variances & Exemptions
f. Standard Processing

Function

(61) ____Automatically translates the PWS Inventory File into MSIS format
(62) ____Maintains data on PWS's having special conditions
(63) ____Checks analyses of water quality to see if authorized methods were used
(64) ____Performs common functions for other subsystems
(65) ____Contains the criteria used to determine violations
(66) ____Keeps information on compliance actions

8. Circle T (True) or F (False) for the following statements:

T F (67) MSIS is a subsystem name as well as the system name.

T F (68) There are ten subsystems in MSIS.

T F (69) FEDR creates printed reports for the federal government.

T F (70) A summary of State enforcement actions is reported annually.

T F (71) Tables and files are both accessible to the user for selecting reports.

T F Water quality transaction input forms are used to enter analytical results.
(72)

T F Any laboratory may submit analysis results.
(73)

9. Rate your current level of knowledge about MSIS:

(74) None
(75) A little
(76) Some
(77) Quite a bit
(78) A great deal

TABLE OF CONTENTS

I. Purpose

II. Introduction

  A. Developmental History

  B. The Model State Information System (MSIS)

III. User Defined Selection of Information

IV. User Defined Report Sequence

V. Restart Printing of Pre-printed Forms

VI. Compliance Cycles

VII. Error Message Table (EMT)

  A. Introduction
  B. Table
  C. Recommended User Action

VIII. Standard Error Messages for Processing Options

  A. Standard Error Messages & Remedial Actions for PROC Records
  B. Standard Error Messages & Remedial Actions for SORT Records
  C. Standard Error Messages & Remedial Actions for SEL1 and SEL2 Records

IX. Subsystem Descriptions

  A. Public Water System Inventory Subsystem (PWSI)

    1. General Description
    2. How to Enter Data
    3. Output Reports
    4. Error Messages and Actions

  B. **Regulations Subsystem** (REGS)

    1. General Description
    2. How to Enter Data
    3. Output Reports
    4. Error Messages and Actions

C. Water Quality Compliance Subsystem (WAQC)

1. General Description
2. How to Enter Data
3. Output Reports
4. Error Messages and Actions

D. Federal Reporting Subsystem (FEDR)

1. General Description
2. How to Enter Data
3. Output Reports
4. Error Messages and Actions

E. Standard Processing Subsystem (MSIS)

1. General Description
2. How to Enter Data
3. Output Reports
4. Error Messages and Actions

F. Variances and Exemptions Subsystem (VAEX)

1. General Description
2. How to Enter Data
3. Output Reports
4. Error Messages and Actions

G. Enforcement Actions Subsystem (ENAC)

1. General Description
2. How to Enter Data
3. Output Reports
4. Error Messages and Actions

H. Sanitary Survey Subsystem (SRVY)

1. General Description
2. How to Enter Data
3. Output Reports
4. Error Messages and Actions

I. Operator and Mailing Subsystem (OPER)

1. General Description
2. How to Enter Data
3. Output Reports
4. Error Messages and Actions

X. Summary of Data Requested to be Reported to EPA

XI. Summary of Data Required for MSIS Processing

XII. Appendix

- A. Data Entry Instructions Form Description
- B. Acronyms
- C. Glossary
- D. References

MSIS Capabilities . . .

1. It maintains records on public water systems (PWS) and the quality of the water they supply

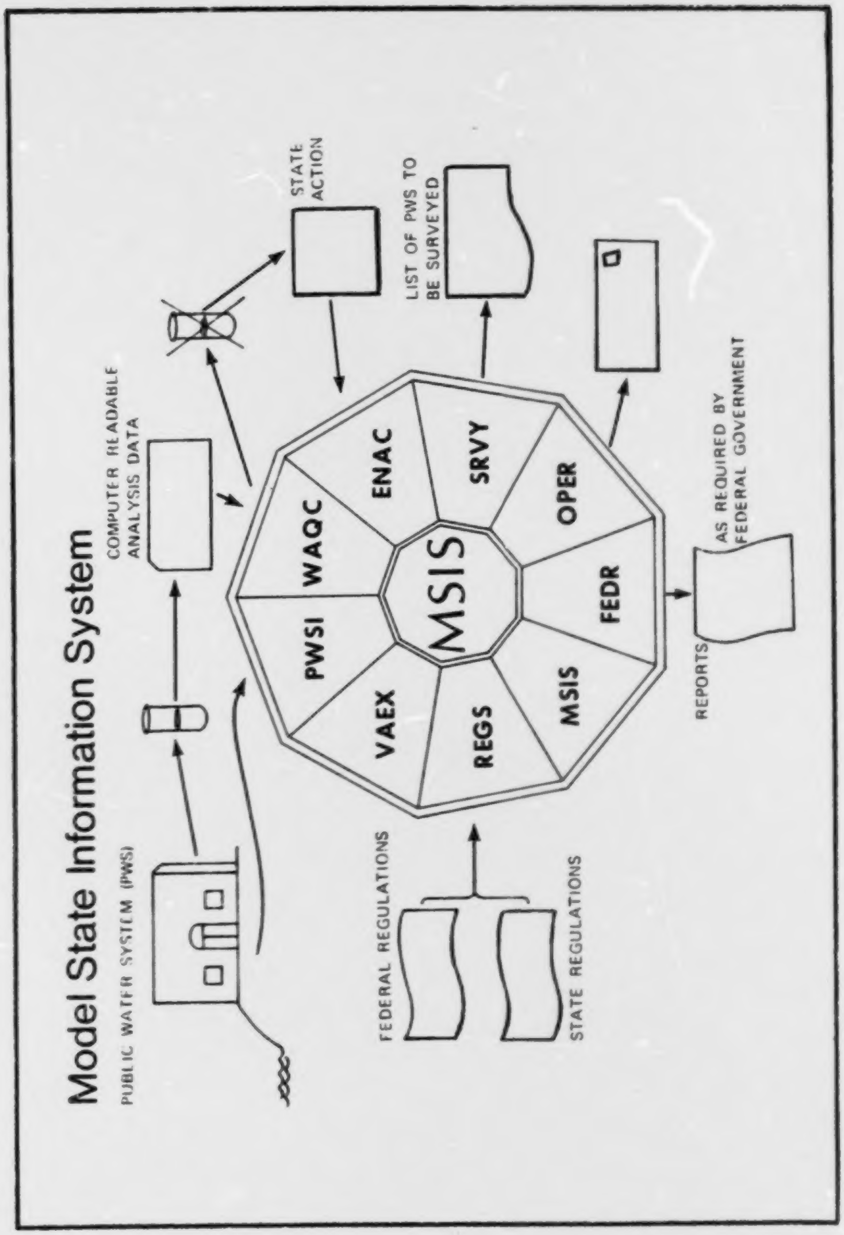
2. It prepares reports required by the federal government under the national Safe Drinking Water Act (SDWA)

Volume II
MSIS Subsystems

Unit I
MSIS Subsystem Functions
MSIS Files
MSIS Tables
Unit II
Input Forms
Output Reports
Unit III
User's Manual

MSIS Subsystems

- Regulations (REGS)
- PWS Inventory (PWSI)
- Water Quality Compliance (WAQC)
- Federal Reporting (FEDR)
- Standard Processing (MSIS)
- Variances and Exemptions (VAEX)
- Enforcement Actions (ENAC)
- Sanitary Survey (SRVY)
- Operator and Mailing (OPER)



Model State Information System

PUBLIC WATER SYSTEM (PWS)
COMPUTER READABLE ANALYSIS DATA
STATE ACTION
LIST OF PWS TO BE SURVEYED
MSIS
PWSI
WAQC
ENAC
SRVY
OPER
FEDR
MSIS
REGS
VAEX
FEDERAL REGULATIONS
STATE REGULATIONS
REPORTS
AS REQUIRED BY FEDERAL GOVERNMENT

MSIS Subsystem

Independence

Dependence

MSIS Files

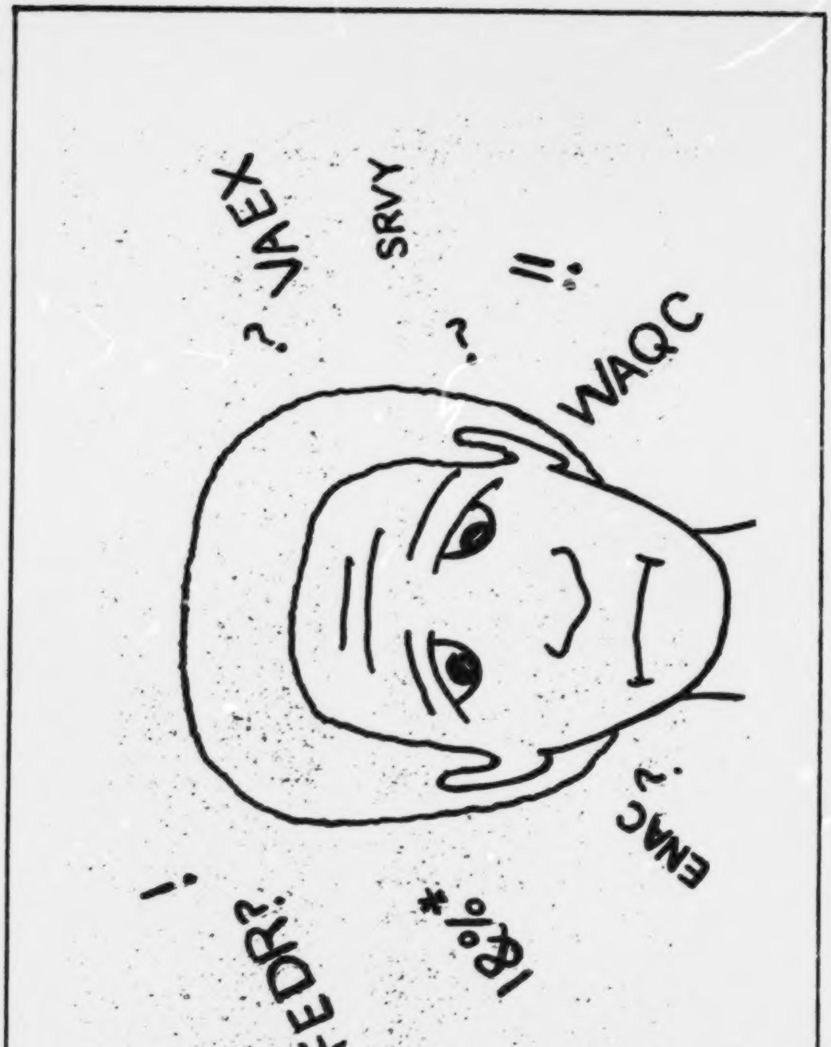
- Public Water (PWF)
- Periodic Sample (PSF)
- Sample and Analysis (SAF)
- Violations (VIF)
- Standard History (SHF)
- Public History (PHF)
- Deviations (DVF)
- Variances and Exemptions (VEF)
- Enforcement Actions (EAF)
- Operator and Mailing (OMF)

Characteristics of Tables

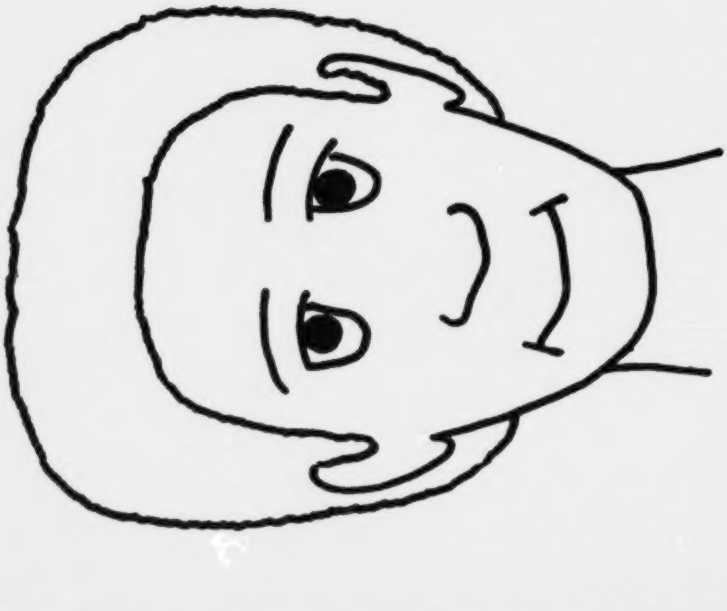
- Define codes used elsewhere by the computer
- Validate information
- Are directly accessible
- Once established seldom changed

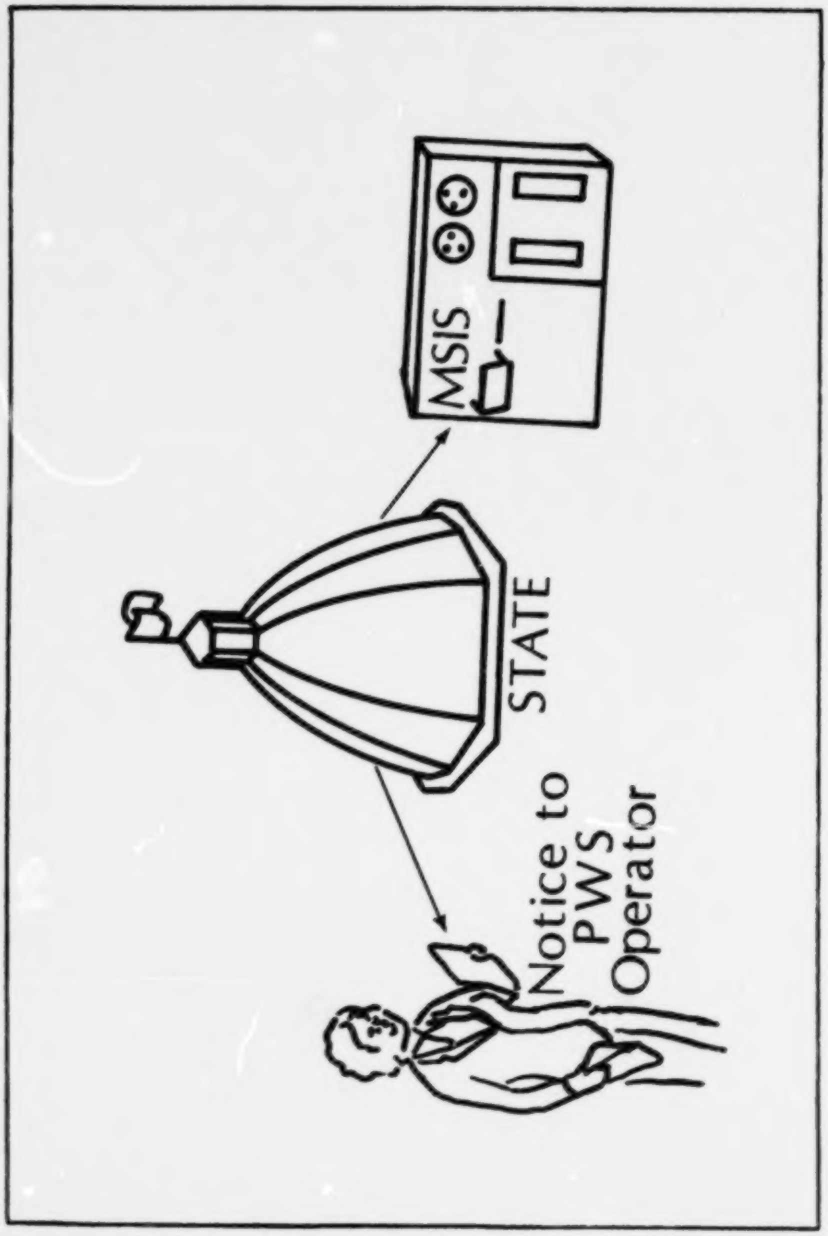
MSIS Tables

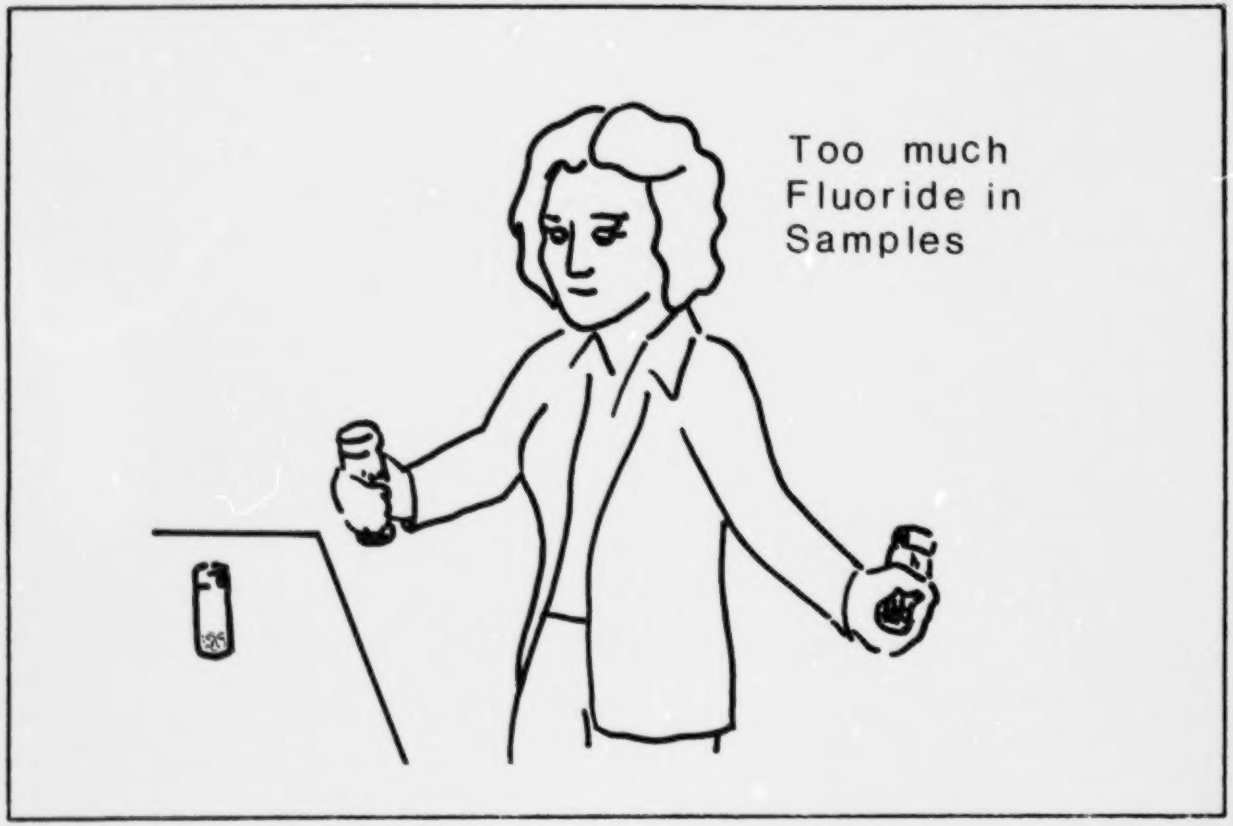
- Error Message (EMT)
- Data Element (DET)
- Code Value (CVT)
- Laboratory (LBT)
- Public Water (PWT)
- Regulations (RGF)

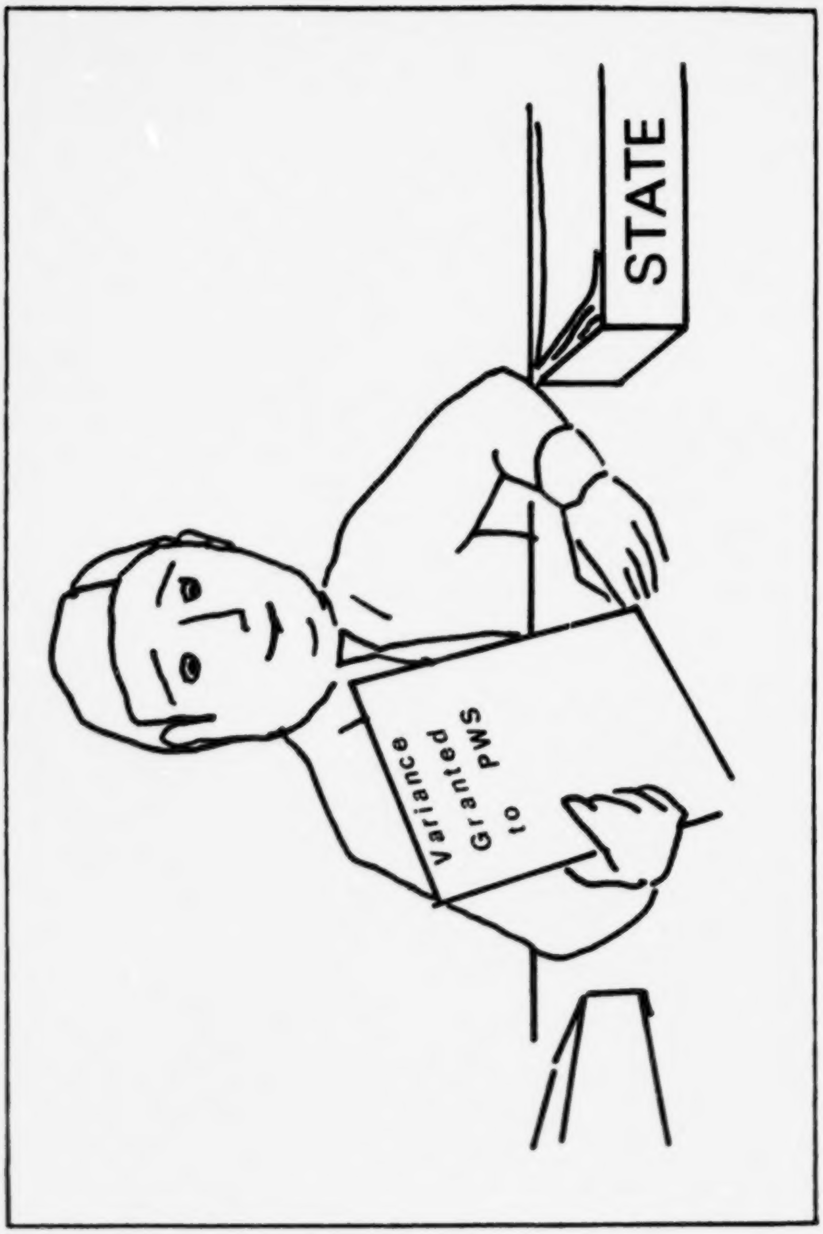

? JAEX
SRVY
!!
?
WAQC
ENAC?
!
FEDR?
!&%*

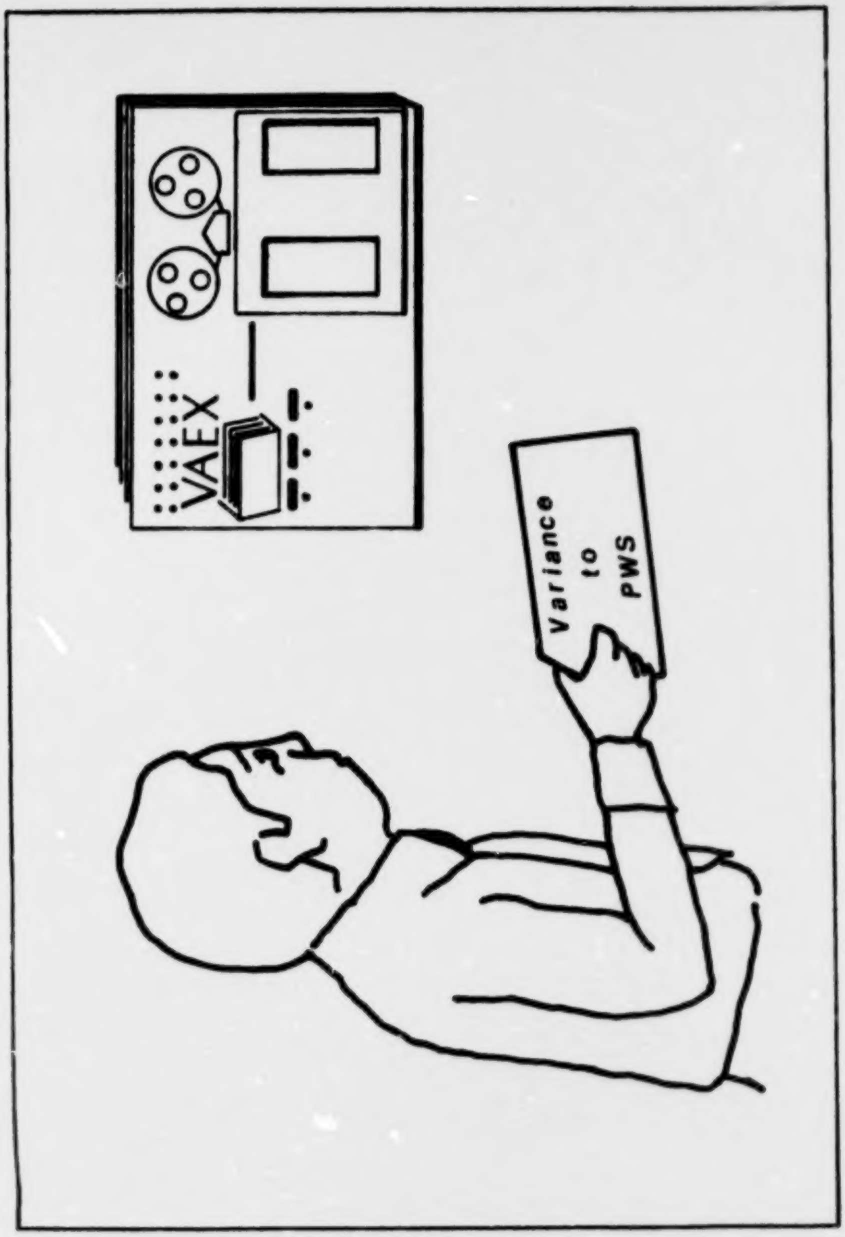
An Example would really help

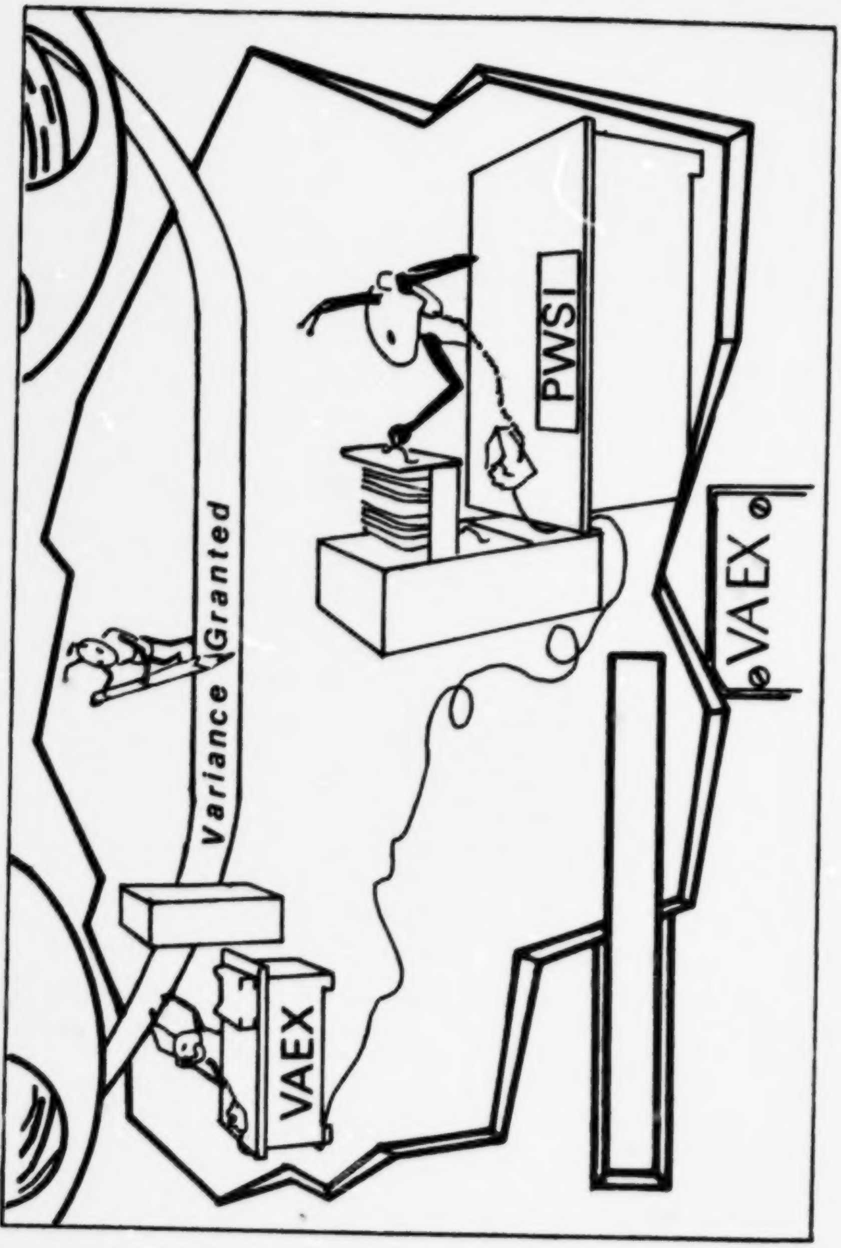


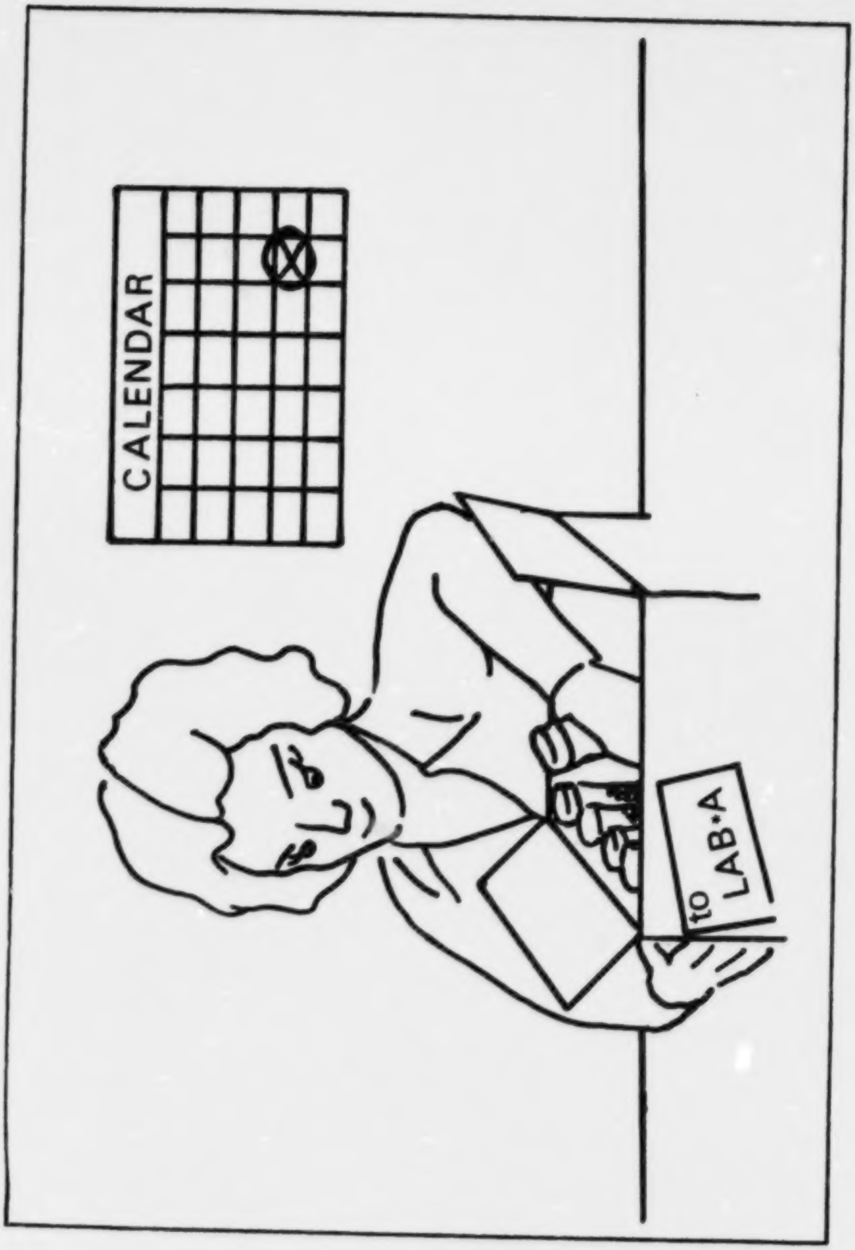

MSIS
STATE
Notice to PWS Operator

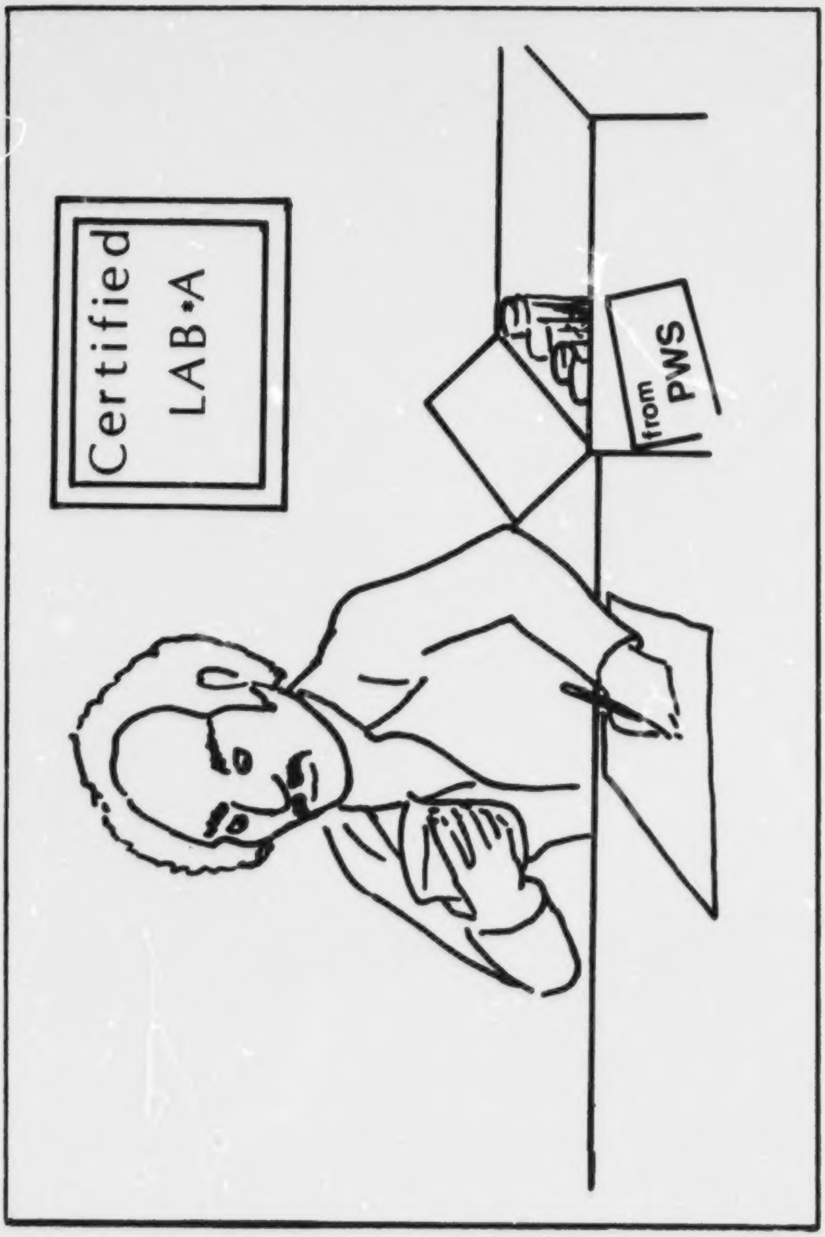

Too much
Fluoride in
Samples

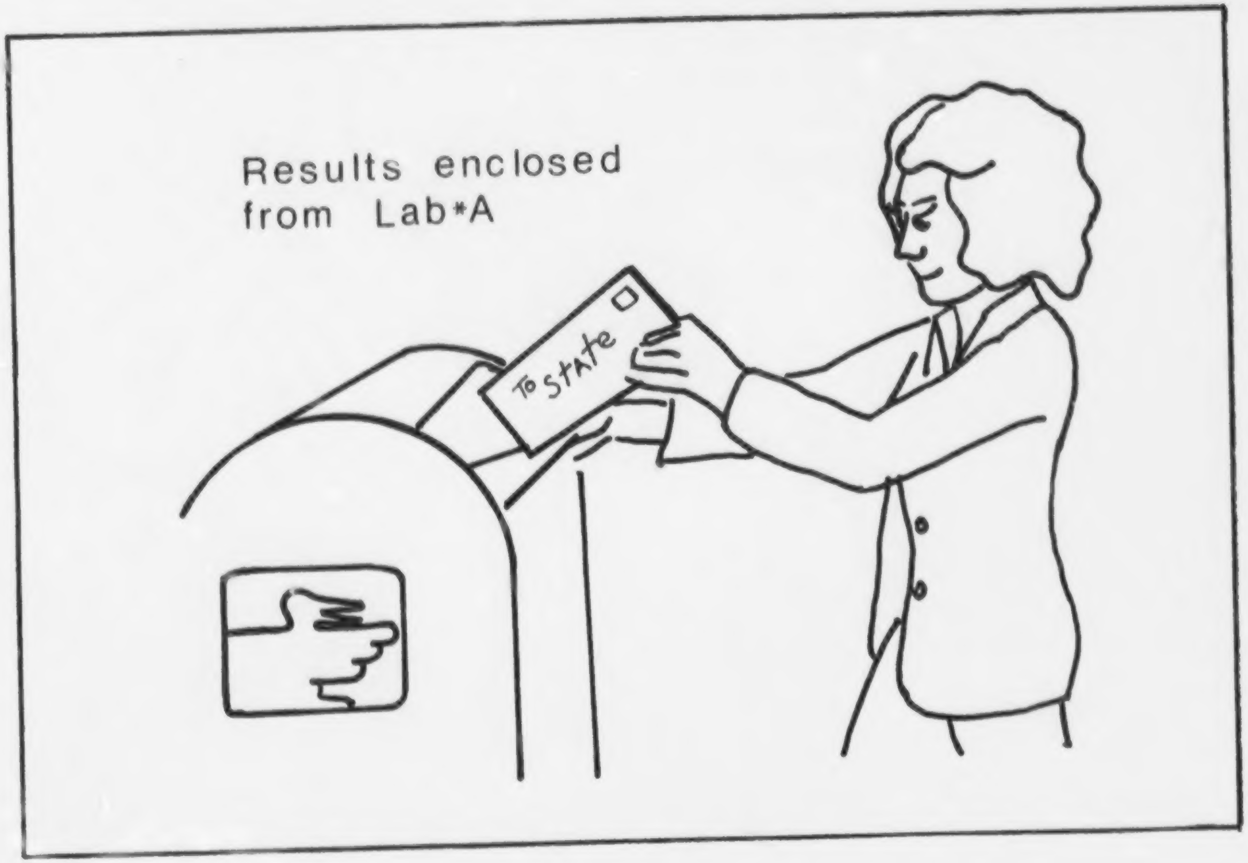

STATE
Variance
Granted
to
PWS

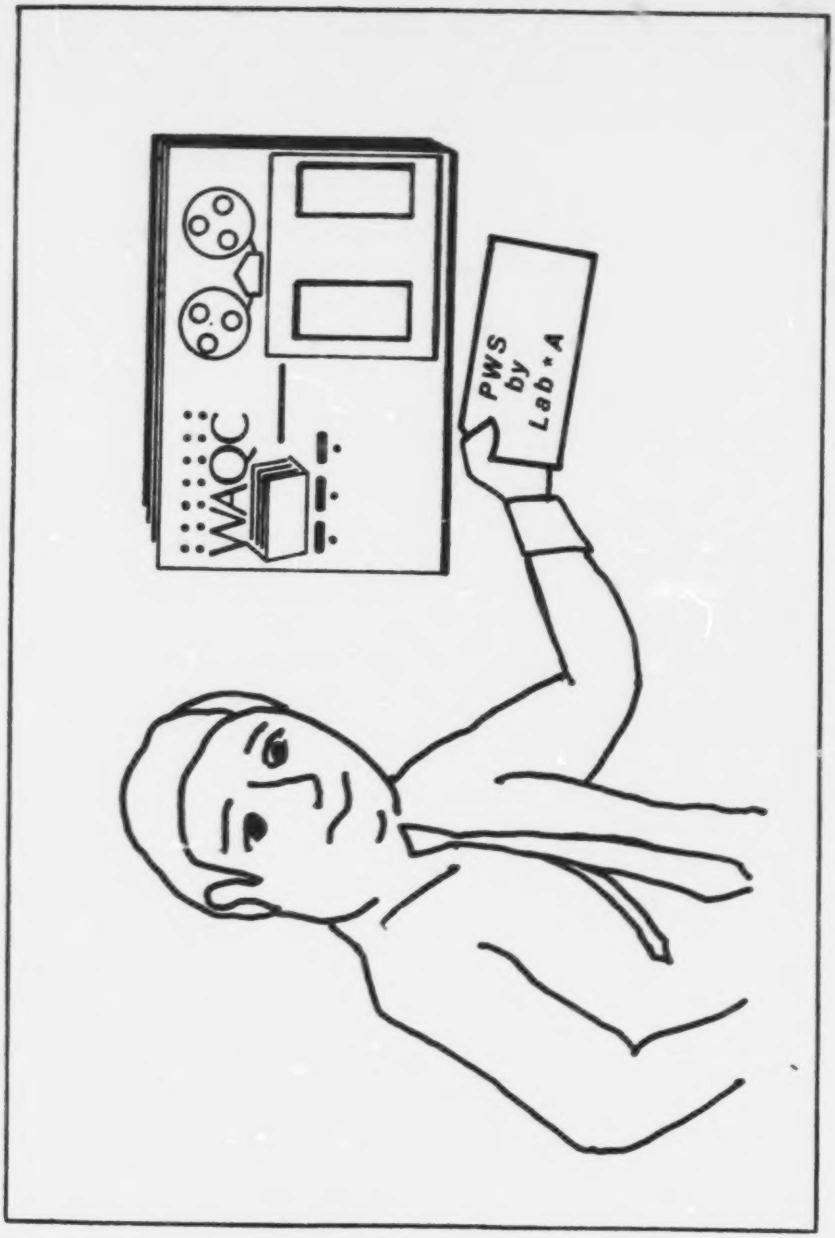

VAEX
Variance
to
PWS

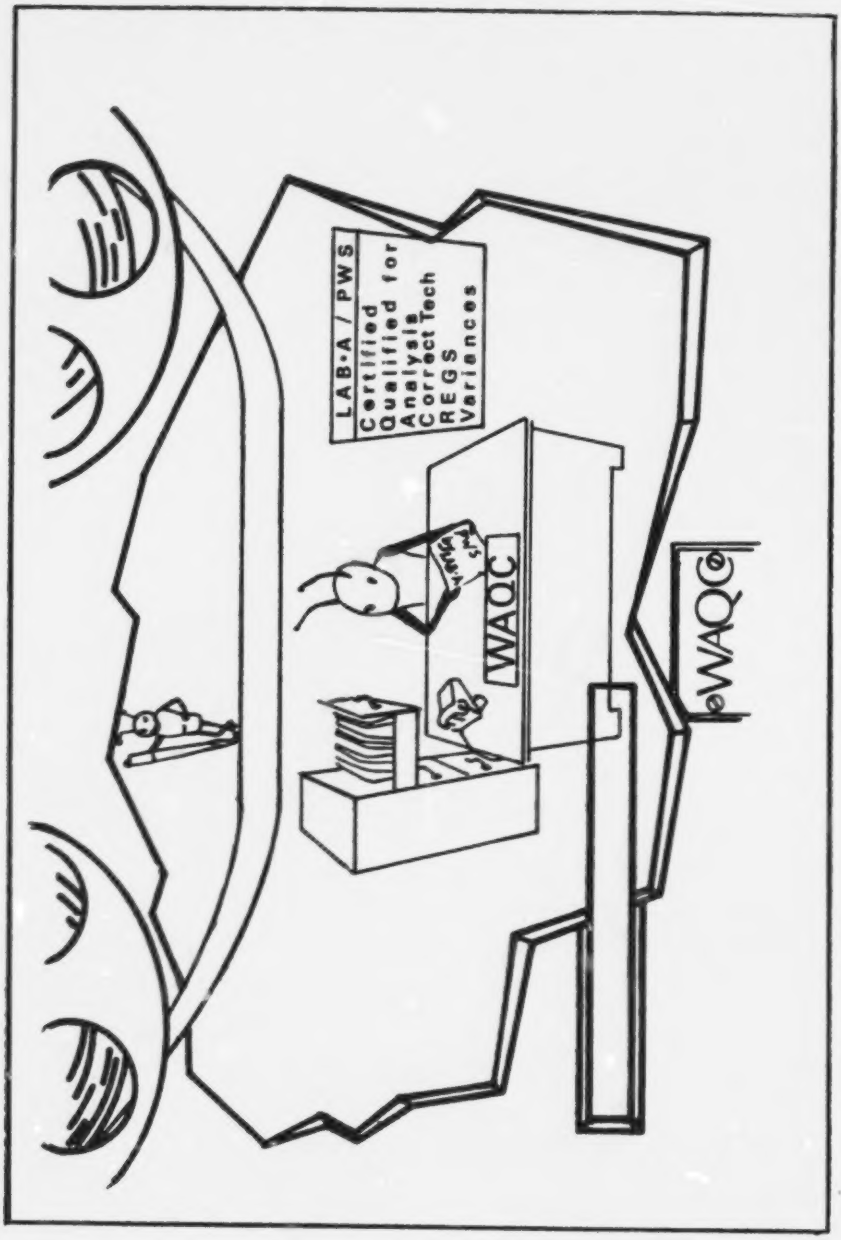

Variance Granted
PWSI
VAEX
VAEX

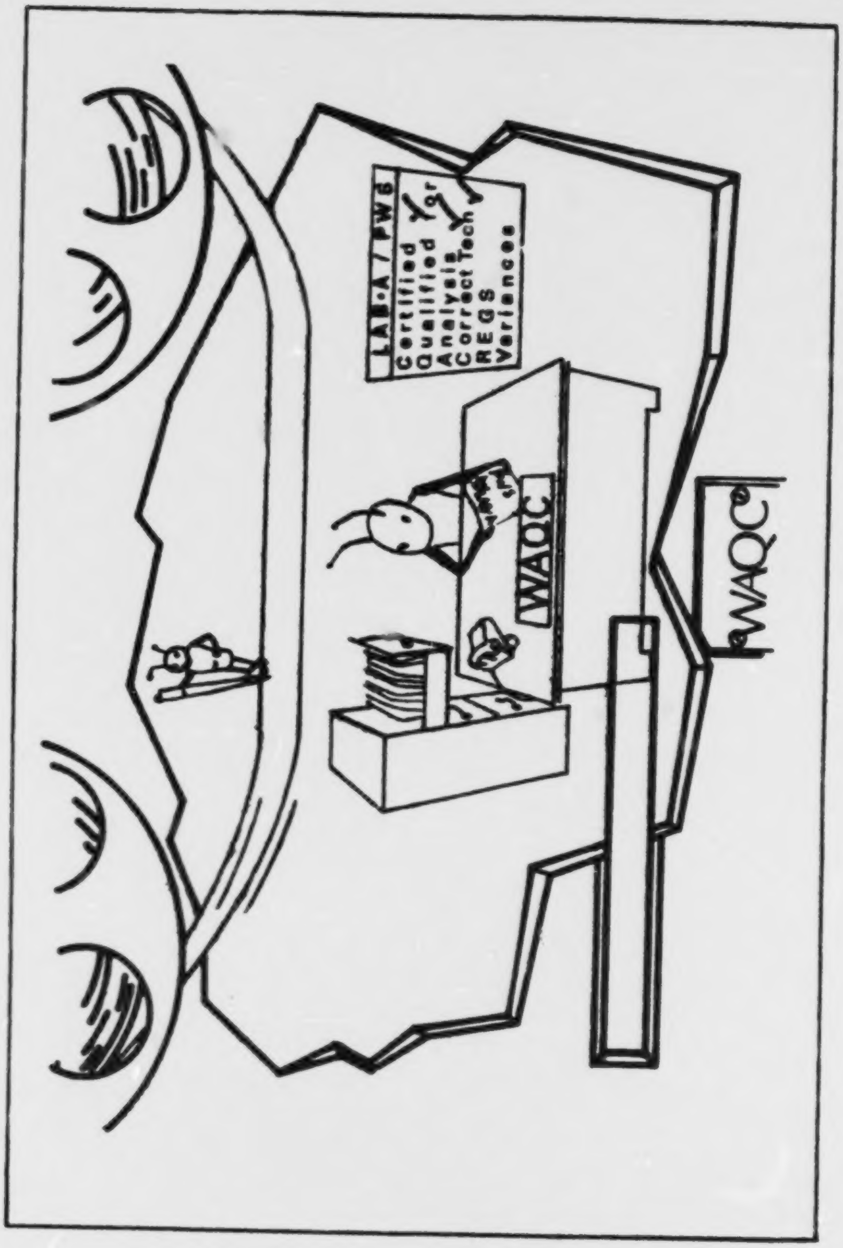

CALENDAR
to LAB•A

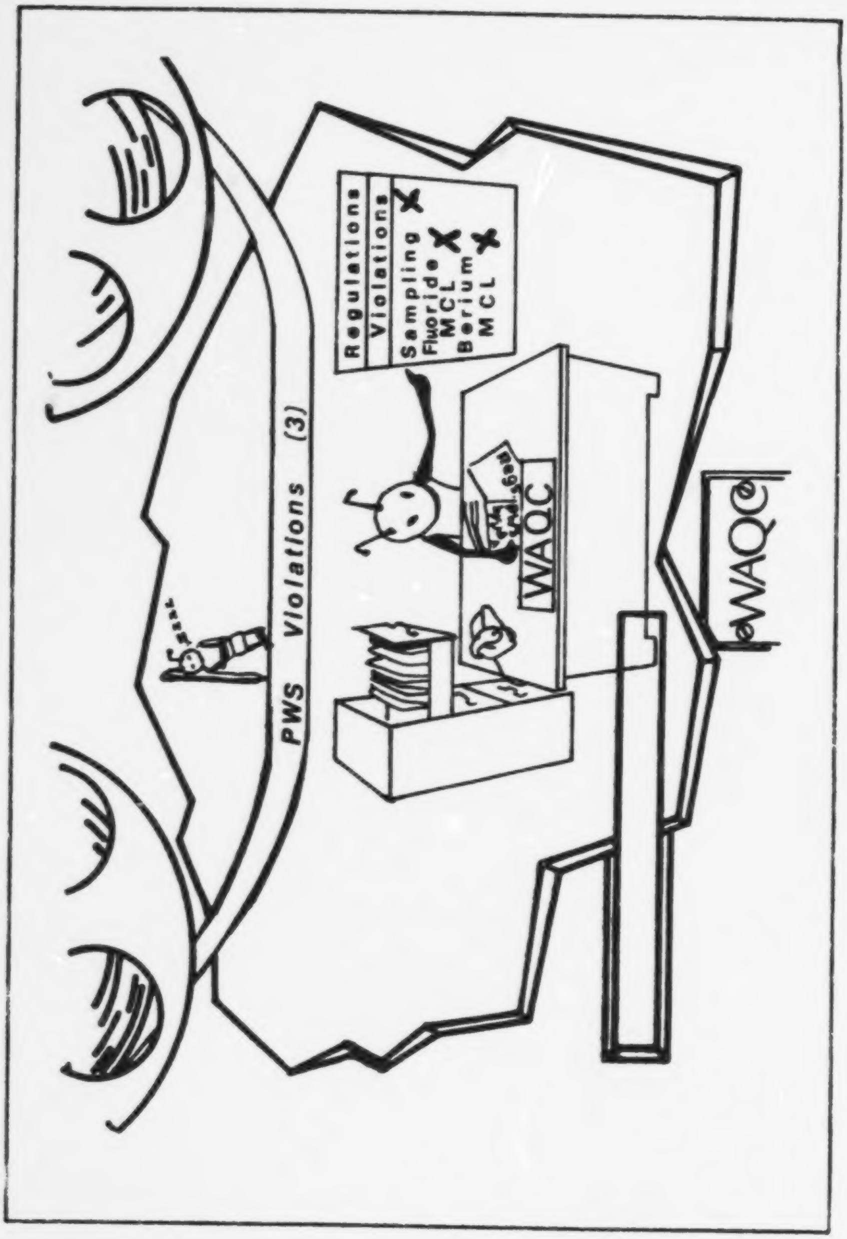

Certified
LAB•A
from
PWS

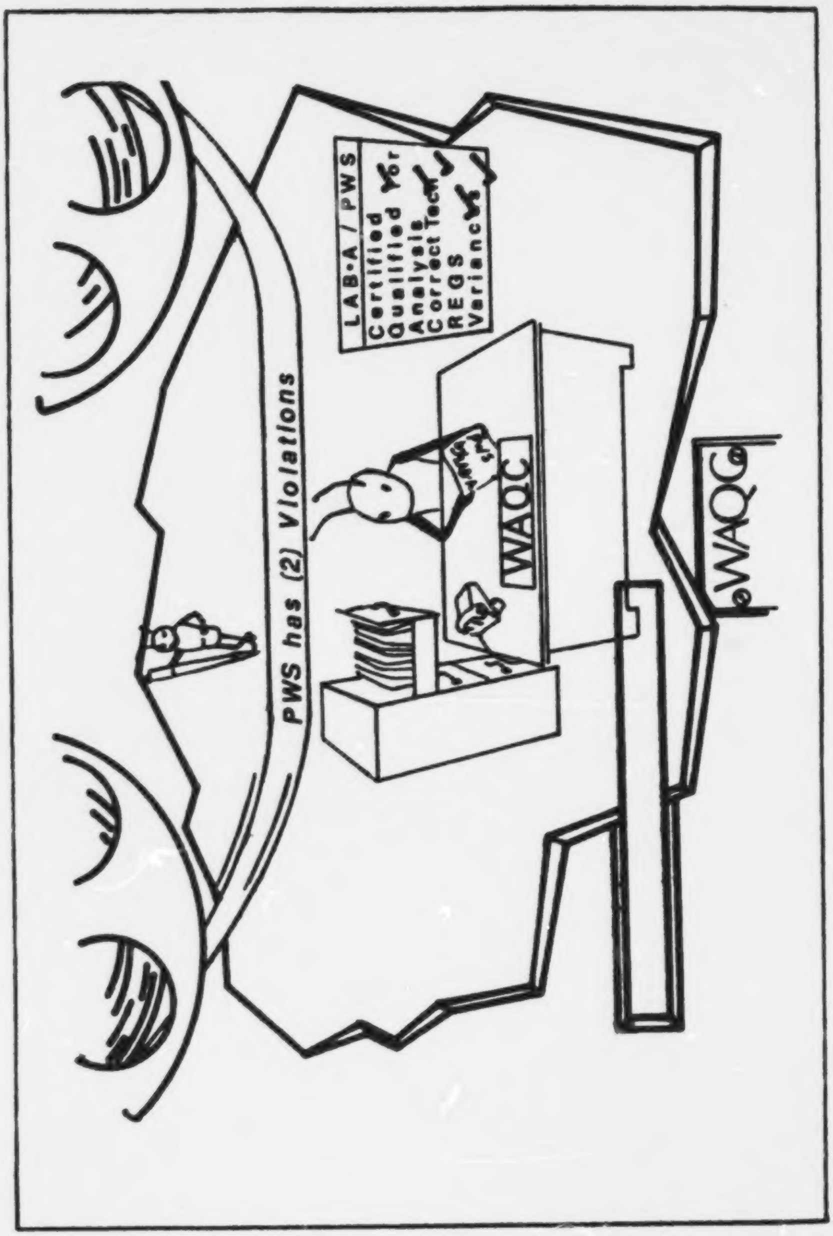

Results enclosed
from Lab*A
To State

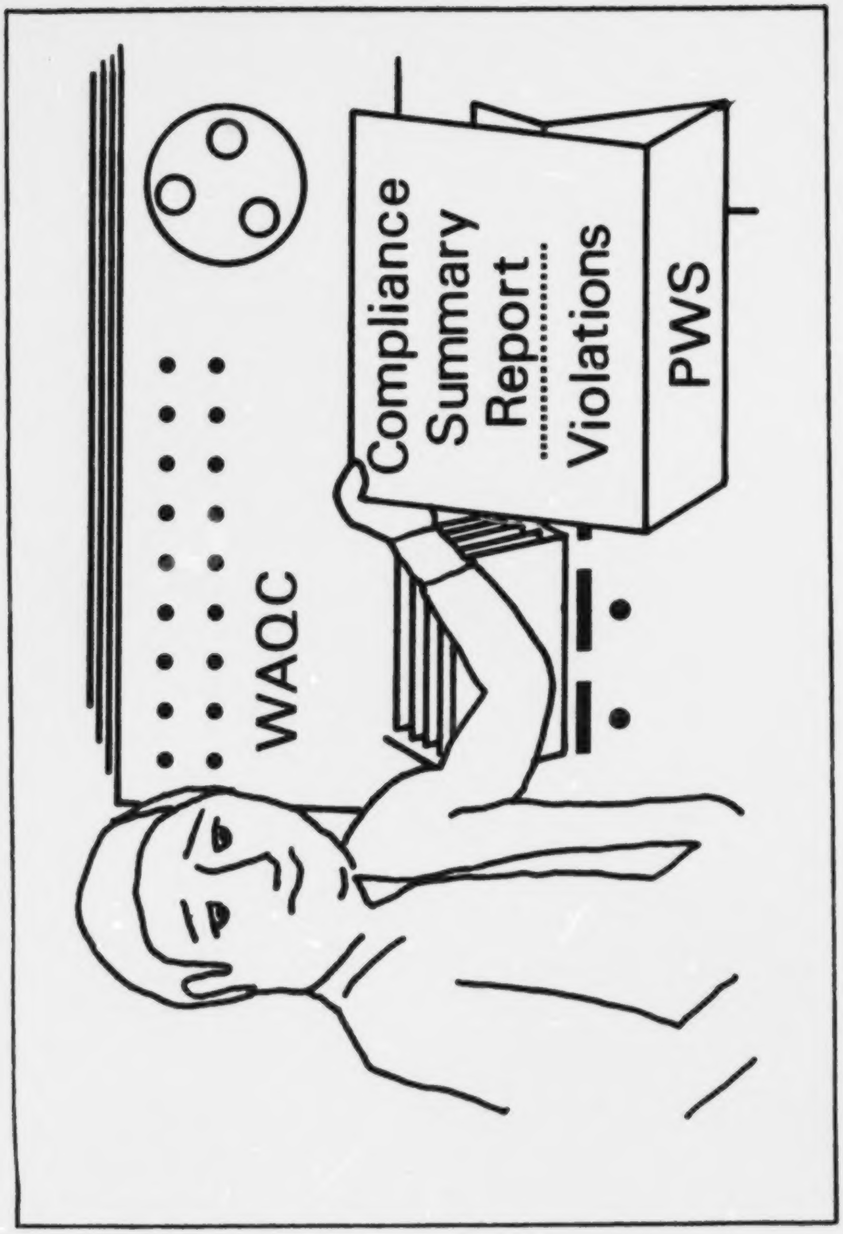

WAQC
PWS
by
Lab * A

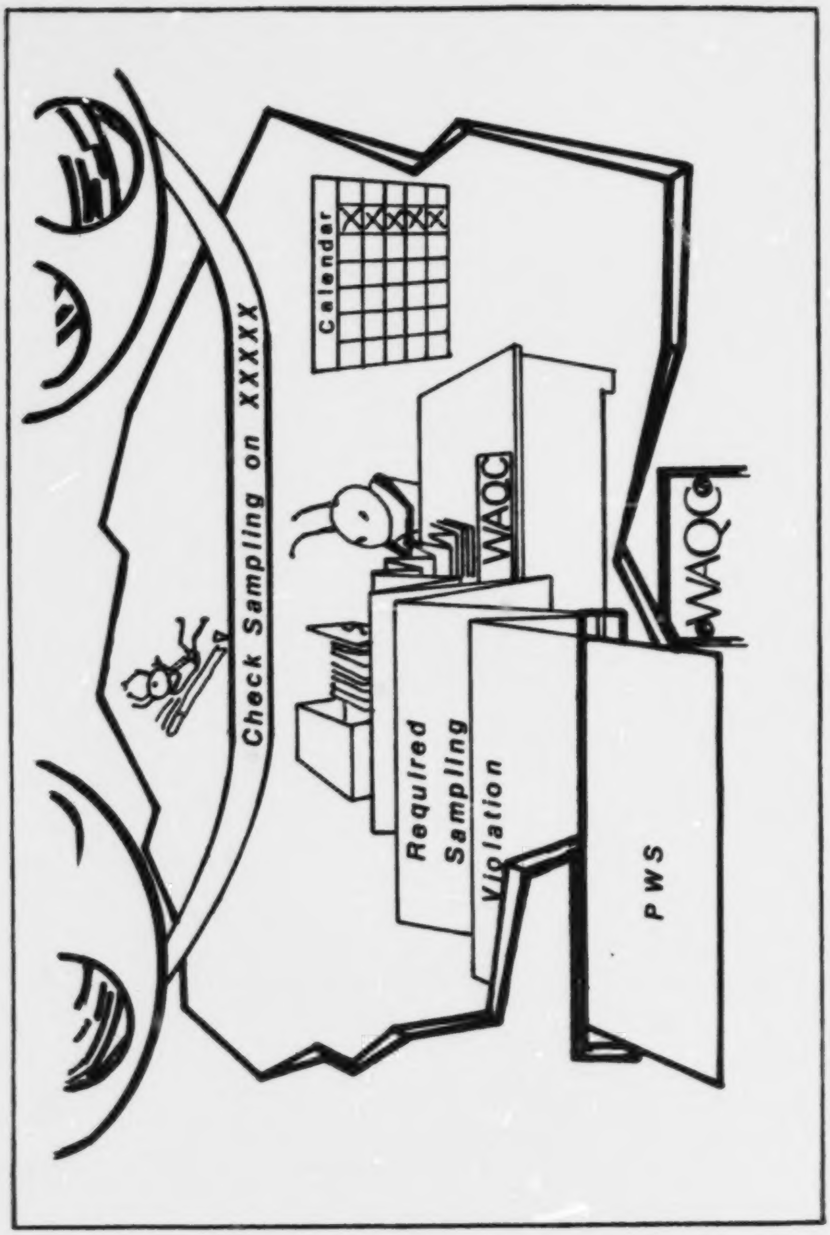

LAB·A / PWS
Certified
Qualified for
Analysis
Correct Tech
REGS
Variances
WAQC
WAQC

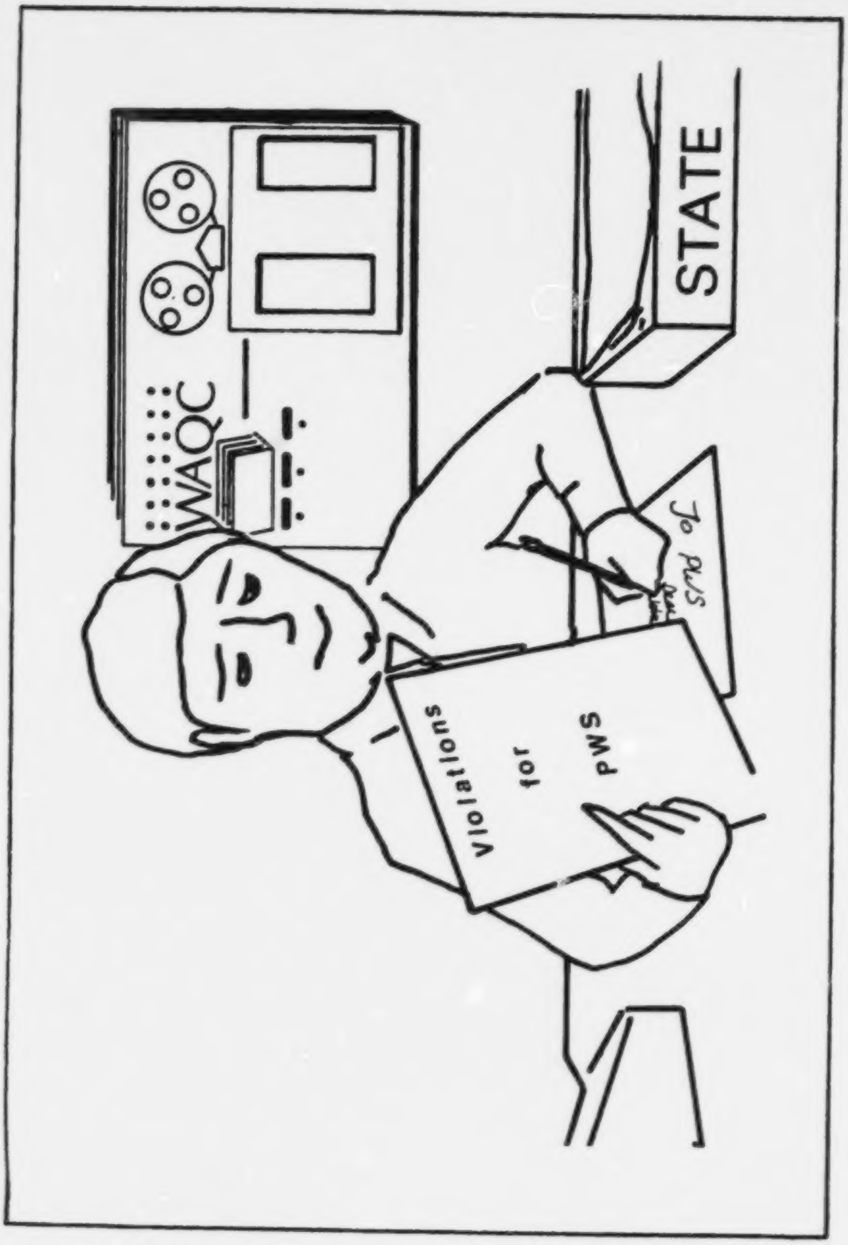

LAB·A / PWS
Certified ✓
Qualified ✓ or
Analysis ✓
Correct Tech ✓
REGS
Variances
WAQC
WAQC

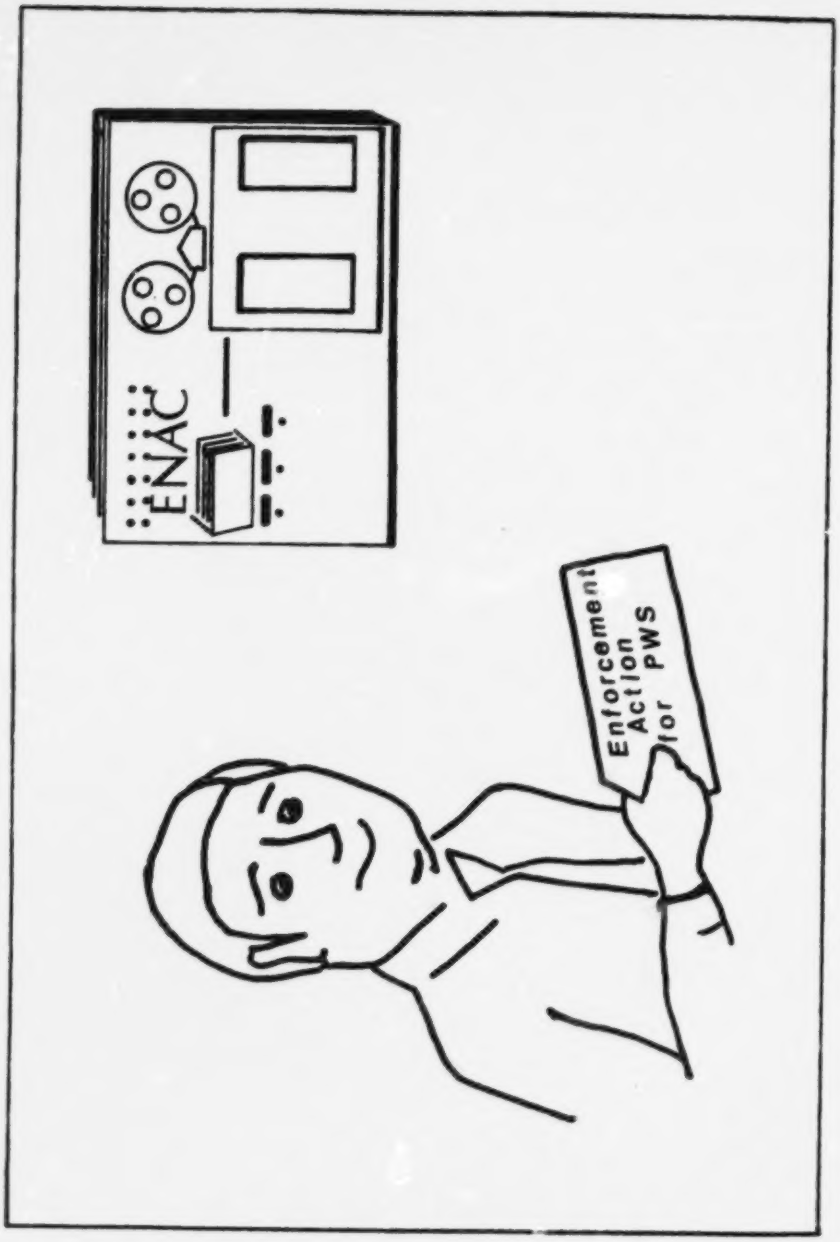

PWS Violations (3)
Regulations
Violations
Sampling
Fluoride MCL
Barium MCL
WAQC
WAQC
Zzzz

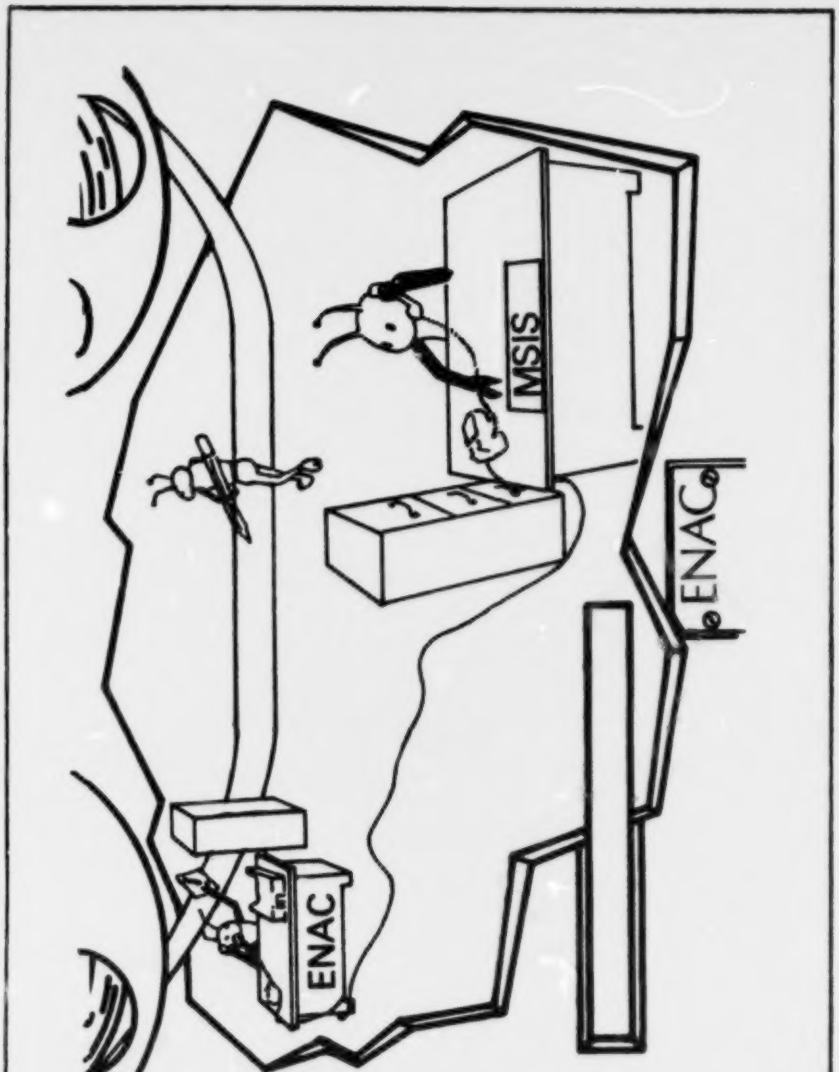

PWS has (2) Violations
LAB-A / PWS
Certified
Qualified for
Analysis
Correct Tech
REGS
Variance
WAQC
WAQC

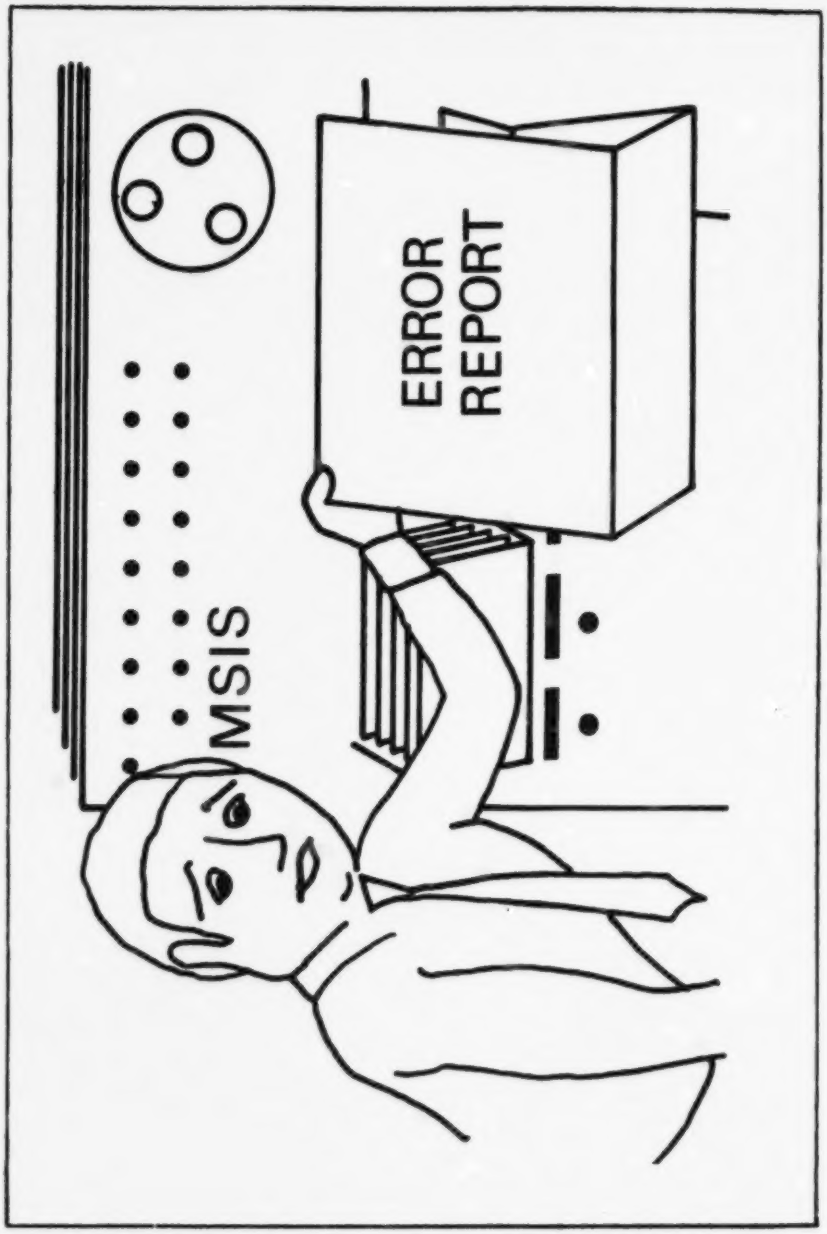

WAQC
Compliance
Summary
Report
Violations
PWS

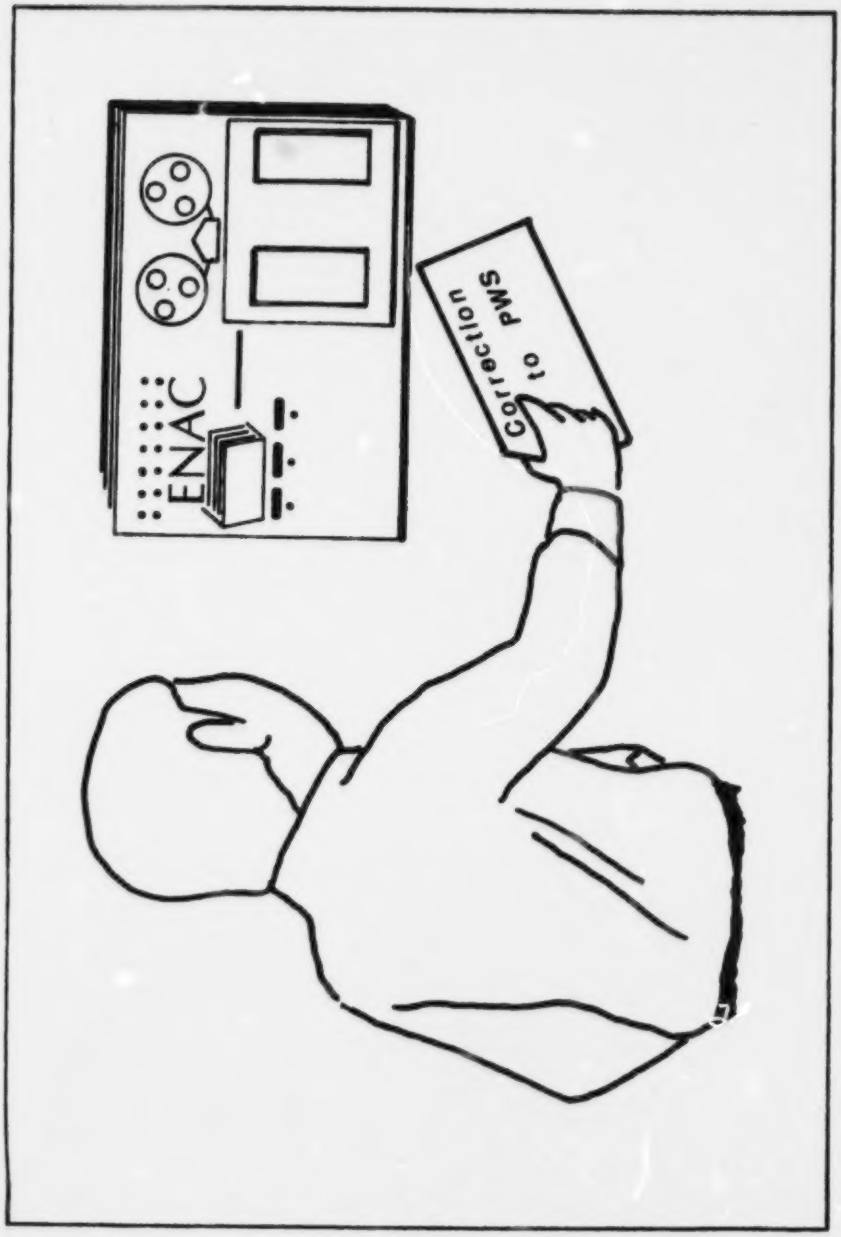

Check Sampling on XXXXX
Calendar
WAOC
WAQC
Required Sampling Violation
PWS


WAQC
STATE
To PWS
Violations
for
PWS

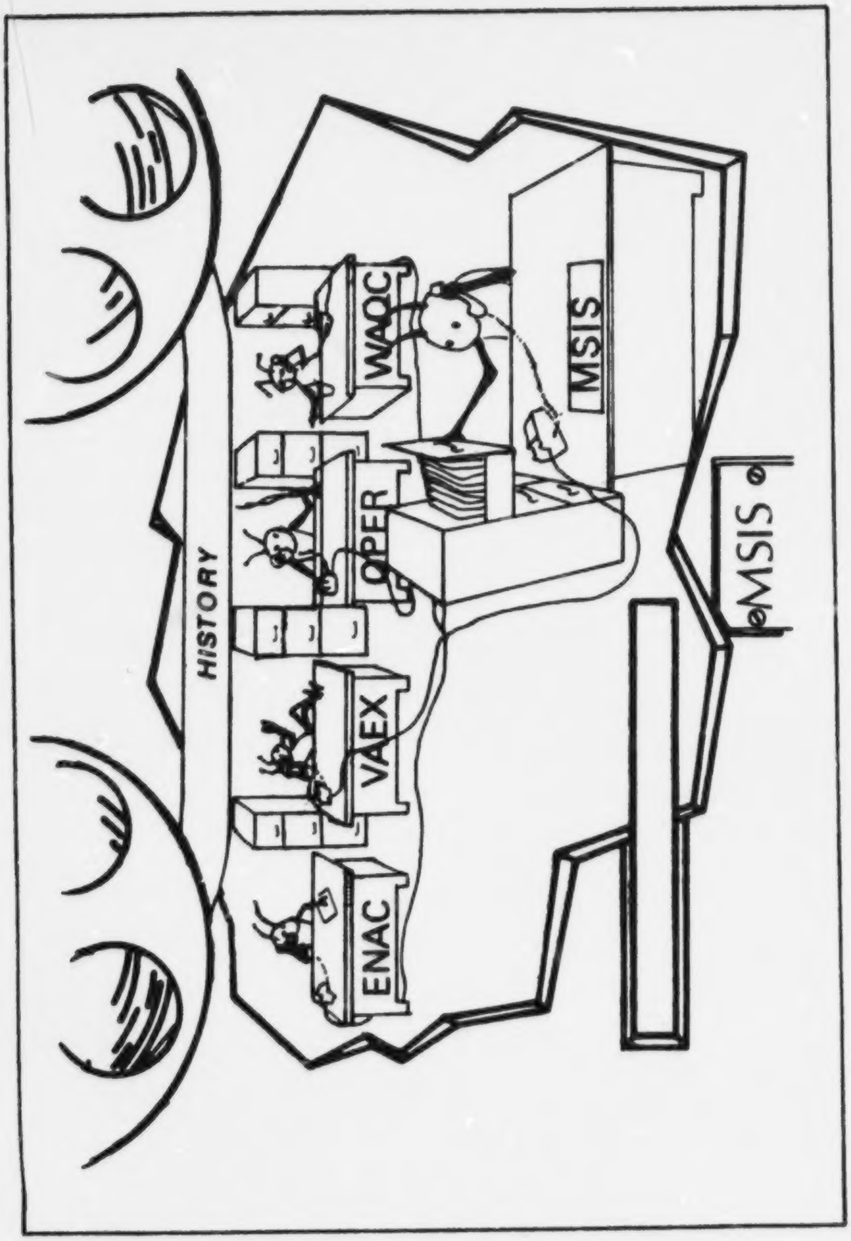

ENAC
Enforcement
Action
for PWS

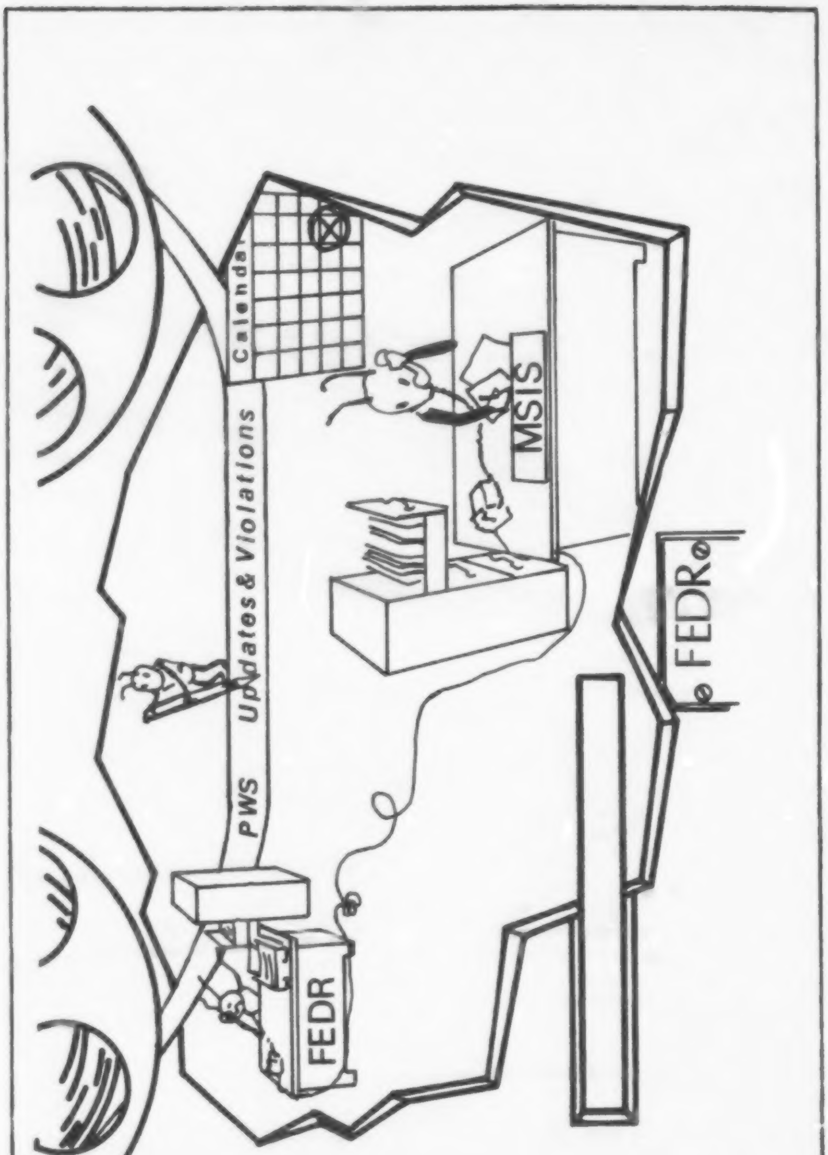

MSIS
ENAC
ENAC

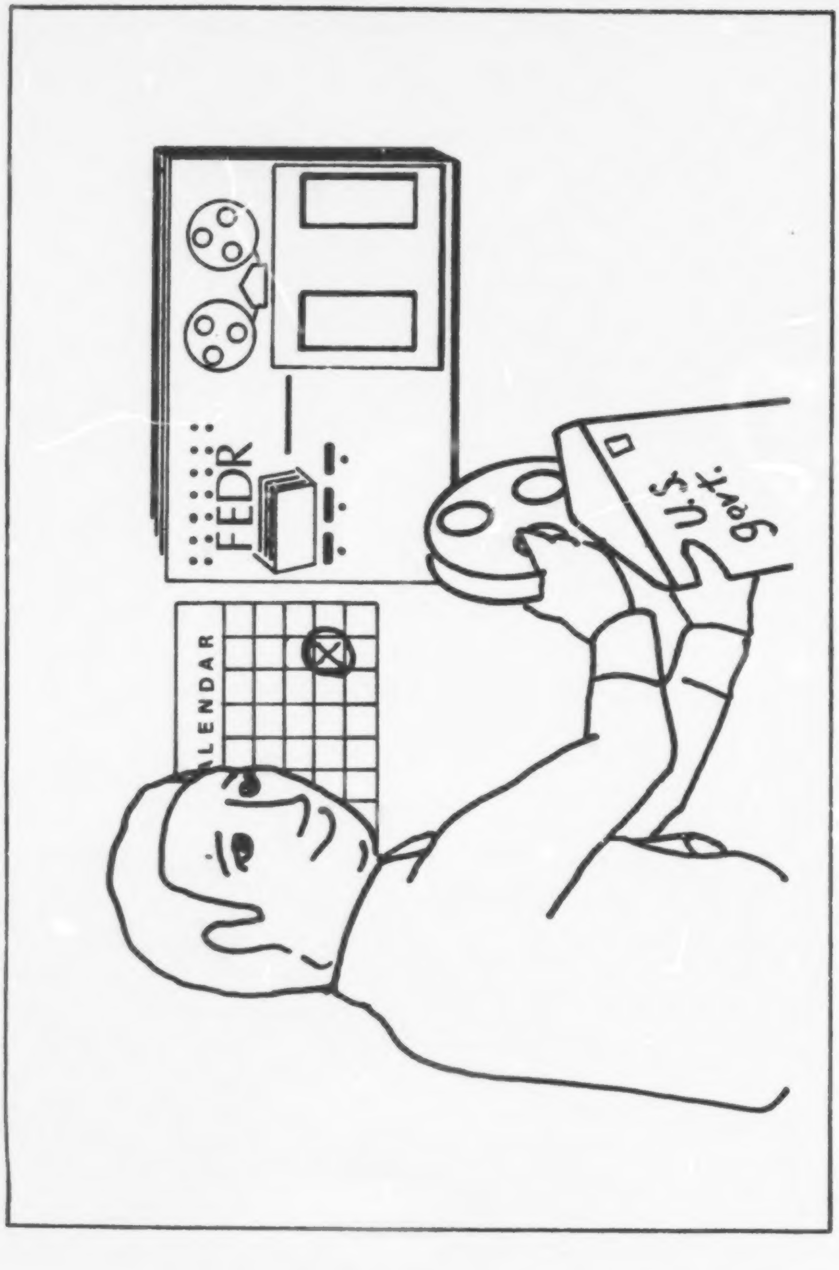

ERROR
REPORT
MSIS

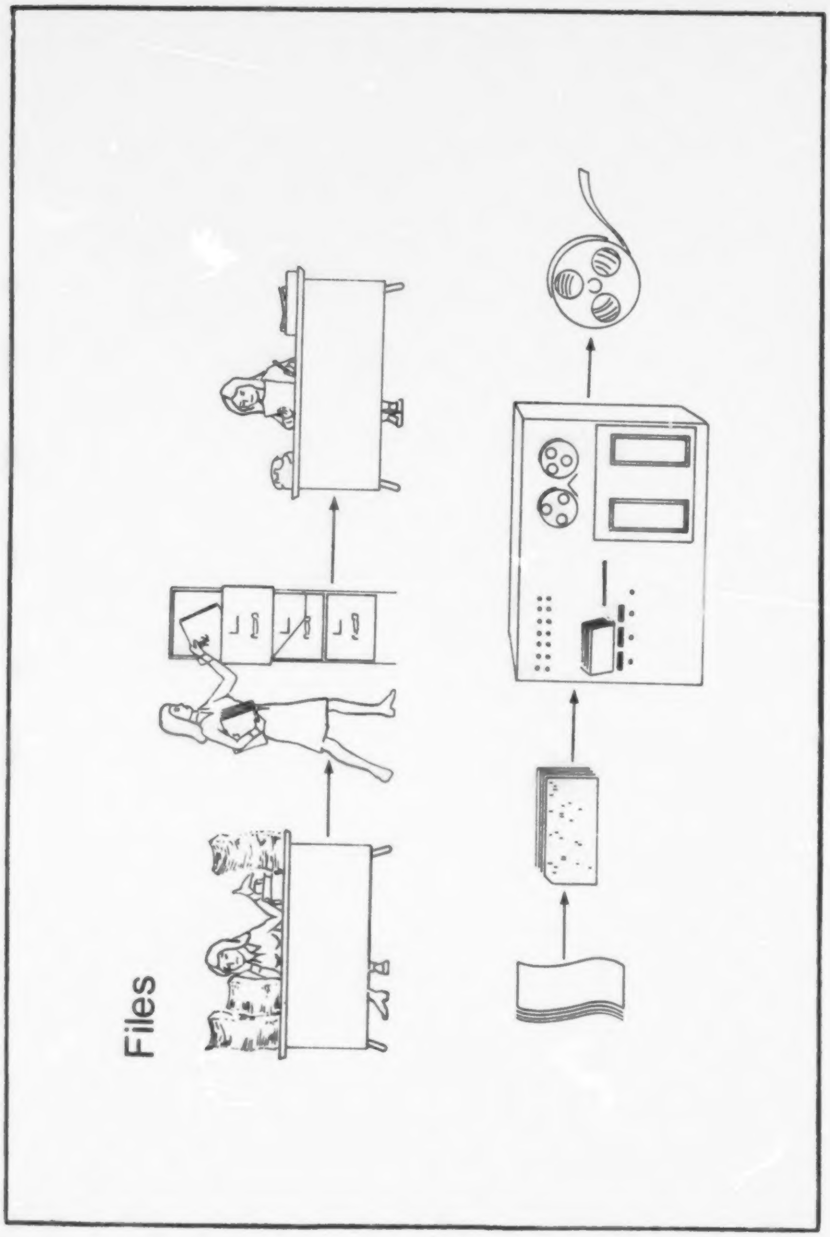

ENAC
Correction to PWS

II.1.S27


HISTORY
WAOC
OPER
VAEX
ENAC
MSIS
MSIS


Calenda
PWS Updates & Violations
MSIS
FEDR
FEDR


ALENDAR
FEDR
U.S.
govt.



Files

MSIS Subsytem Permanent Files Maintained By
Update and Utilization

Files \ MSIS Subsystems	MSIS	REGS	PWSI	WAQC	FEDR	VAEX	ENAC	SRVY	OPER
PWF			M						
PSF				M					
SAF				M					
VIF				M					
SHF	M								
PHF			M						
DVF									
VEF						M			
EAF							M		
OMF									M

MSIS TABLES

Table Name	Table Abbreviation	Creating Subsystem
Code Value Table	CVT	MSIS
Data Element Table	DET	MSIS
Error Message Table	EMT	MSIS
Public Water System Inventory Table	PWT	PWSI
Laboratory Table	LBT	WAQC
Regulations File	RGF	REGS

Types of Input Forms

- Processing Options
- Table Creation
- Record Creation and Maintenance
- Water Quality Transactions

Processing Option Input Forms

PROC
SORT
SEL1 (Selection Criteria 1)
SEL2 (Selection Criteria 2)

Record Creation and Maintenance Forms

- Public Water System Inventory
- Variances and Exemptions
- Enforcement Actions
- Operator and Mailing

Water Quality Transactions Input Forms

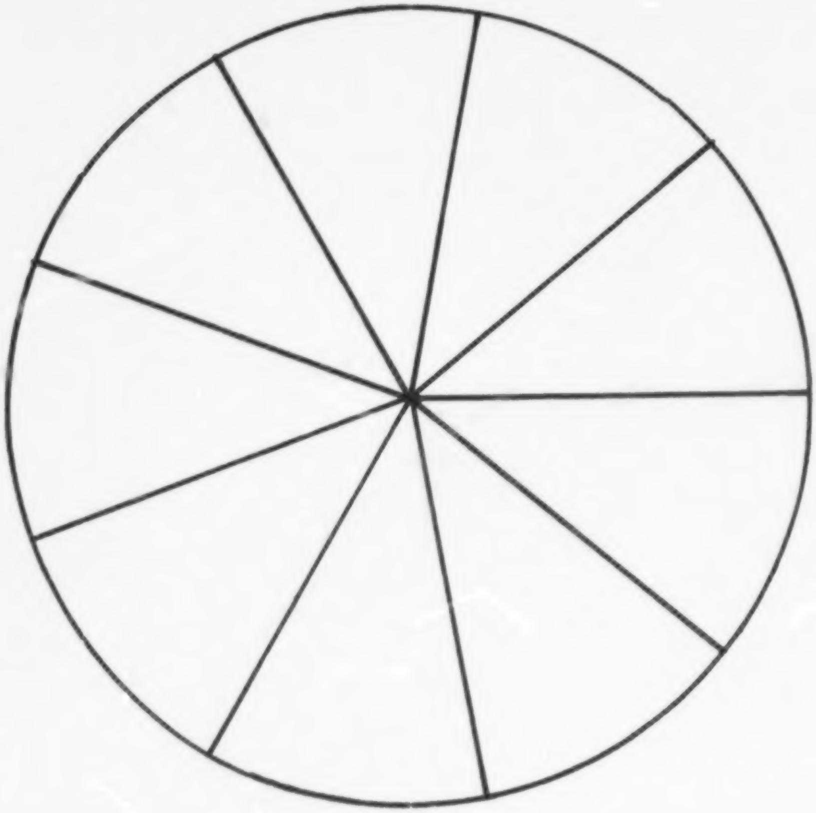
- Sample Deletion Transactions
- Chemical or Radiological Analysis Input Transactions
- Bacterialogical or Turbidity Analysis Input Transactions
- Bacterialogical or Turbidity Summary Analysis Input Transaction

Output Reports
- Statistical
- Input
- Error
- Informational

Output Reports
- Regulations
- PWS Comprehensive Listing
- PWS Condensed Reports
- MSIS History Report
- Compliance Summary Report
- Chemical Sampling Schedule Reports

MSIS Subsystems

1. Name the nine MSIS subsystems, placing a name in each section of the circle.



MSIS Subsystems

Match the subsystems with their functions, by drawing lines.

Subsystems

PWS Inventory (PWSI)

Regulations (REGS)

Operator and Mailing (OPER)

Variances and Exemptions

Enforcement Actions (ENAC)

Sanitary Survey (SRVY)

Standard Processing (MSIS)

Federal Reporting (FEDR)

Water Quality Compliance (WAQC)

Functions

1. Gives the computer information to determine violations.
2. Maintains a list of certain distributors of water.
3. Selects public water systems that need a thorough examination.
4. Maintains the addresses of persons interested in water quality.
5. Maintains the information on PWSs that have special conditions.
6. Maintains information on the activities ensuring compliance.
7. Creates special files of interest to EPA.
8. Records samples, analyses, and violations.
9. Performs common functions among subsystems.

II.1.E3

MSIS Files

1. List the files which contain various kinds of information on PWSs.

______________________________ ______________________________

______________________________ ______________________________

______________________________ ______________________________

______________________________ ______________________________

2. List the files which contain information on water quality.

______________________________ ______________________________

______________________________ ______________________________

______________________________ ______________________________

______________________________ ______________________________

3. List the files which contain information on the history of transactions.

______________________________ ______________________________

______________________________ ______________________________

______________________________ ______________________________

______________________________ ______________________________

MSIS Tables

1. List the six tables.

____

____

____

____

____

____

2. Match the table with the subsystem that creates it.

REGS
PWSI
WAQC
FEDR
VAEX
ENAC
SRVY
OPER
MSIS

MSIS Tables

1. Name the table which performs the function stated.

   1. Allows the computer to inform the user of problems it encounters.
      ____

   2. Provides the computer with the information on what is acceptable for a particular field. ______________________________

   3. Supplies the computer with the location of particular information that is referred to by the user. ______________________________

   4. Supplies the computer with abbreviated information on Public Water Systems. ______________________

   5. Provides the computer with the information on acceptable analyzers of sample data. ______________________________

   6. Provides the computer with the information necessary to determine MCL and sampling violations and to set up sampling schedules.
      ____

II.2.E1

Input Forms

1. List the four input form categories.
2. Specify two input forms per category.

Output Reports

1. Specify the kind of output report that will supply the information to answer the question.
   1. How many PWSs on my Public Water File (PWF)? ____________________
   2. Is the MCL for arsenic on the RGF correct? ____________________
   3. Why didn't I get the report I requested? ____________________
   4. What violations occurred last month? ____________________
   5. Who should be sending in sample analyses? ____________________
   6. What are the acceptable values for "Operator Type"? ____________
   7. What was the percentage increase in our mailing list? __________
   8. What data do I need to complete the VEF for the last update? ______

      ____

2. Which kind of report is probably the most important to the user?

   ____

3. State the special characteristic of the reports prepared by the FEDR subsystem for submission to the federal government. ________________

   ____

   ____

User's Manual

List by subsystem all the possible informational reports that may be produced using MSIS.

Subsystem	Informational Reports

Subsystem Informational Reports

User's Manual

Prepare the appropriate input forms to select all Public Water Systems that are required by the federal regulations to monitor man-made racioactivity, i.e., all community PWSs using surface water sources and serving more than 100,000 persons. At the same time select all public water systems that are required to perform quarterly monitoring for gross beta particle and iodine-131 radioactivity and annual monitoring for strontium-90 and tritium, i.e., all community PWSs utilizing waters contaminated by effluents from nuclear facilities.

PWSI020.080 PWSI.107

MODEL STATE INFORMATION SYSTEM

PUBLIC WATER SYSTEM INVENTORY SUBSYSTEM

SELECTION FORM - DEFINITION OF DATA ELEMENTS

CARD ID	DATA ELEMENT MNEMONIC NAME	DATA ELEMENT COMPARATIVE VALUE	DATA ELEMENT LOGIC ID NO.
S E L 1 1-4	☐☐☐☐☐☐☐☐☐☐ 5-14	☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐ 15-29	☐☐ 30-31
DUP 1 - 4	☐☐☐☐☐☐☐☐☐☐	☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐	☐☐
.	☐☐☐☐☐☐☐☐☐☐	☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐	☐☐
.	☐☐☐☐☐☐☐☐☐☐	☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐	☐☐
.	☐☐☐☐☐☐☐☐☐☐	☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐	☐☐
.	☐☐☐☐☐☐☐☐☐☐	☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐	☐☐
.	☐☐☐☐☐☐☐☐☐☐	☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐	☐☐
.	☐☐☐☐☐☐☐☐☐☐	☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐	☐☐
.	☐☐☐☐☐☐☐☐☐☐	☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐	☐☐
.	☐☐☐☐☐☐☐☐☐☐	☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐	☐☐
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.	☐☐☐☐☐☐☐☐☐☐	☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐	☐☐
.	☐☐☐☐☐☐☐☐☐☐	☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐	☐☐

II.3.E2

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PWSI020.080 PWSI.108

MODEL STATE INFORMATION SYSTEM
PUBLIC WATER SYSTEM INVENTORY SUBSYSTEM

SELECTION FORM - DEFINITION OF LOGIC FOR SELECTION

RELATION SYMBOLS: LT = LESS THAN
EQ = EQUAL
GT = GREATER THAN
NL = NOT LESS THAN
NG = NOT GREATER THAN
NX = NOT EXISTS(EMPTY)

CARD ID	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL
S E L 2 1-4	01	☐☐ 5-6	02	☐☐ 7-8	03	☐☐ 9-10	04	☐☐ 11-12
	05	☐☐ 13-14	06	☐☐ 15-16	07	☐☐ 17-18	08	☐☐ 19-20
	09	☐☐ 21-22	10	☐☐ 23-24	11	☐☐ 25-26	12	☐☐ 27-28
	13	☐☐ 29-30	14	☐☐ 31-32	15	☐☐ 33-34	16	☐☐ 35-36
	17	☐☐ 37-38	18	☐☐ 39-40	19	☐☐ 41-42	20	☐☐ 43-44
	21	☐☐ 45-46	22	☐☐ 47-48	23	☐☐ 49-50	24	☐☐ 51-52
	25	☐☐ 53-54	26	☐☐ 55-56	27	☐☐ 57-58	28	☐☐ 59-60
	29	☐☐ 61-62	30	☐☐ 63-64	31	☐☐ 65-66	32	☐☐ 67-68
	33	☐☐ 69-70	34	☐☐ 71-72	35	☐☐ 73-74		

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PWSI020.080 PWSI.108

MODEL STATE INFORMATION SYSTEM

PUBLIC WATER SYSTEM INVENTORY SUBSYSTEM

SELECTION FORM - DEFINITION OF LOGIC FOR SELECTION

RELATION SYMBOLS:

LT = LESS THAN
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GT = GREATER THAN
NL = NOT LESS THAN
NG = NOT GREATER THAN
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CARD ID	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL
S E L 2 1-4	01	☐☐ 5-6	02	☐☐ 7-8	03	☐☐ 9-10	04	☐☐ 11-12
	05	☐☐ 13-14	06	☐☐ 15-16	07	☐☐ 17-18	08	☐☐ 19-20
	09	☐☐ 21-22	10	☐☐ 23-24	11	☐☐ 25-26	12	☐☐ 27-28
	13	☐☐ 29-30	14	☐☐ 31-32	15	☐☐ 33-34	16	☐☐ 35-36
	17	☐☐ 37-38	18	☐☐ 39-40	19	☐☐ 41-42	20	☐☐ 43-44
	21	☐☐ 45-46	22	☐☐ 47-48	23	☐☐ 49-50	24	☐☐ 51-52
	25	☐☐ 53-54	26	☐☐ 55-56	27	☐☐ 57-58	28	☐☐ 59-60
	29	☐☐ 61-62	30	☐☐ 63-64	31	☐☐ 65-66	32	☐☐ 67-68
	33	☐☐ 69-70	34	☐☐ 71-72	35	☐☐ 73-74		

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MODEL STATE INFORMATION SYSTEM

DATA ELEMENT DESCRIPTION

DATE:	VERSION:	REQUESTED BY EPA TO BE REPORTED ANNUALLY:	MANDATED FOR MSIS PROCESSING REQUIREMENTS:
11/16 76	1	Yes	Yes

DATA ELEMENT

CATALOGUE NO.:	MNEMONIC NAME:	PROGRAM NAME:
183	PW-PL-POPL	PWF- LANT-POPULATION-SERVED

DESCRIPTION AND USE:

Represents the total population obtaining water from the Public Water System.

DATA TYPE: A/N

PICTURE: X(9)

SOURCE(S):

SUBSYSTEMS:	PWSI	REGS	WAQC	FEDR	VAEX	ENAC	SRVY	OPER	MSIS
INPUT TO:	X		X	X			X		
OUTPUT OF:	X			X					

ACCEPTABLE VALUES:

Any numeric

EDIT CRITERIA:

For updates, may be blank.
When creating a new record, must be entered - error code 004.
When creating a new record, must be numeric - error code 010.
If entered on an update, must be numeric - error code 401.
If entered, should not exceed 20000000 - error code 101

ADDITIONAL COMMENTS:

Does not include the population of consecutive water systems unless requested by the State (see Section 141.29 of the National Interim Primary Drinking Water Regulations, Part IV).

MODEL STATE INFORMATION SYSTEM
DATA ELEMENT DESCRIPTION

DATE:	VERSION:	REQUESTED BY EPA TO BE REPORTED ANNUALLY:	MANDATED FOR MSIS PROCESSING REQUIREMENTS:
11/16/76	1	Yes	Yes

DATA ELEMENT

CATALOGUE NO.:	MNEMONIC NAME:	PROGRAM NAME:
244	PW-PL-SOCO	PWF-PLANT-SOURCE-CODE

DESCRIPTION AND USE:	DATA TYPE:
Represents a code identifying the type of water source.	A/N
	PICTURE:
	X(1)

SOURCE(S):

SUBSYSTEMS:	PWSI	REGS	WAOC	FEDR	VAEX	ENAC	SRVY	OPER	MSIS
INPUT TO:	X		X	X			X		
OUTPUT OF:	X			X					

ACCEPTABLE VALUES:

S = Surface Water
G = Ground Water
P = Purchased Water (originating surface source)
W = Purchased Water (originating ground source)
Z = Delete this source

EDIT CRITERIA:

If entered, must be 'S', 'G', 'P', 'W', or 'Z' - error code 011.

When adding a water source, must be entered - error code 004.

ADDITIONAL COMMENTS:

If any water source has a code of 'S' or 'P', the entire Public Water System is classified as using surface water.

MODEL STATE INFORMATION SYSTEM
DATA ELEMENT DESCRIPTION

DATE: 11/16 76	**VERSION:** 1	**REQUESTED BY EPA TO BE REPORTED ANNUALLY:** Yes	**MANDATED FOR MSIS PROCESSING REQUIREMENTS:** Yes

DATA ELEMENT

CATALOGUE NO.: 182	**MNEMONIC NAME:** PW-PL-TYPE	**PROGRAM NAME:** PWF-PLANT-TYPE

DESCRIPTION AND USE:

Represents a flag indicating if a PWS is a community or non-community PWS.

DATA TYPE: A/N

PICTURE: X(1)

SOURCE(S):

Input form

SUBSYSTEMS:	**PWSI**	**REGS**	**WAQC**	**FEDR**	**VAEX**	**ENAC**	**SRVY**	**OPER**	**MSIS**
INPUT TO:	X		X	X			X		
OUTPUT OF:	X			X					

ACCEPTABLE VALUES:

'C' = Community
'N' = Non-community

EDIT CRITERIA:

When creating a new record, must be 'C' or 'N' - error code 011 and must be entered - error code 004.

For updates, may be blank.

ADDITIONAL COMMENTS:

For a complete definition of community vs. non-community PWS, refer to Section 141.2 of the National Interim Primary Drinking Water Regulations, Part IV.

MODEL STATE INFORMATION SYSTEM

DATA ELEMENT DESCRIPTION

DATE: 11/16 76	**VERSION:** 1	**REQUESTED BY EPA TO BE REPORTED ANNUALLY:** No	**MANDATED FOR MSIS PROCESSING REQUIREMENTS:** No

DATA ELEMENT

CATALOGUE NO.: 222	**MNEMONIC NAME:** PW-S-NUCL	**PROGRAM NAME:** PWF-STATE-NUCLEAR-FACILITY

DESCRIPTION AND USE: Represents a flag indicating whether the Public Water System is contaminated by effluents from a nuclear facility.	**DATA TYPE:** A/N **PICTURE:** X(1)

SOURCE(S):

Input form

SUBSYSTEMS:	**PWSI**	**REGS**	**WAQC**	**FEDR**	**VAEX**	**ENAC**	**SRVY**	**OPER**	**MSIS**
INPUT TO:	X		X	X			X		
OUTPUT OF:	X			X					

ACCEPTABLE VALUES:

Y = Yes, contaminated by a nuclear facility

N = No, not contaminated by a nuclear facility

EDIT CRITERIA:

If entered, must be 'Y' or 'N' - error code 407. Default to 'N'.

When reinitializing this field ($), reinitialize to 'N'.

ADDITIONAL COMMENTS:

See Section 141.26(b) (4) of the National Interim Primary Drinking Water Regulations, Part II.

User's Manual

List the Standard Error Message you would expect from each of the entries on the following SORT form. (List only one error message per incorrect entry. If an entry will not produce an error message, leave the answer blank empty.)

User's Manual

Page 1

Position	Standard Error Message (if any)
5-6	
7-16	
17	
18-19	
20-29	
30	
31-32	
33-42	
43	
44-45	
46-55	
56	
57-58	
59-68	
69	

II.3.E3

User's Manual

Page 2

Position	Standard Error Message (if any)
5-6	
7-16	
17	
18-19	
20-29	
30	
31-32	
33-42	
43	
44-45	
46-55	
56	
57-58	
59-68	
69	

MODEL STATE INFORMATION SYSTEM

STANDARD PROCESSING SUBSYSTEM

STANDARD HISTORY FILE SELECTION

SORT OPTIONS FOR JOB ______________

CARD ID	SORT SEQUENCE	MNEMONIC NAME OF DATA ELEMENT	SORT MODE	
SORT 1-4	1 5-6	SH-RECORD 7-16	D 17	A=ASCENDING D=DESCENDING
	02 18-19	SH FILE ID 20-29	D 30	A=ASCENDING D=DESCENDING
	03 31-32	SH-REC-ID 33-42	A 43	A=ASCENDING D=DESCENDING
	05 44-45	SHDECODE 46-55	A 56	A=ASCENDING D=DESCENDING
	06 57-58	SH-CUR-UP 59-68	A 69	A=ASCENDING D=DESCENDING

PREPARED BY ______________________ DATE __/__/__

APPROVED BY ______________________ DATE __/__/__

MODEL STATE INFORMATION SYSTEM

STANDARD PROCESSING SUBSYSTEM

STANDARD HISTORY FILE SELECTION

SORT OPTIONS FOR JOB ________________

CARD ID	SORT SEQUENCE	MNEMONIC NAME OF DATA ELEMENT	SORT MODE	
SORT 1-4	06 5-6	SH-LST-UP 7-16	☐ 17	A=ASCENDING D=DESCENDING
	08 18-19	SH-OLD-VAL 20-29	D 30	A=ASCENDING D=DESCENDING
	07 31-32	SH-NEW-VAL 33-42	D 43	A=ASCENDING D=DESCENDING
	10 44-45	TYPE 46-55	A 56	A=ASCENDING D=DESCENDING
	11 57-58	PW-ID 59-68	D 69	A=ASCENDING D=DESCENDING

PREPARED BY ______________________________ DATE ___/___/___

APPROVED BY ______________________________ DATE ___/___/___

MODEL STATE INFORMATION SYSTEM

DATA ELEMENT DESCRIPTION

DATE:	VERSION:	REQUESTED BY EPA TO BE REPORTED ANNUALLY:	MANDATED FOR MSIS PROCESSING REQUIREMENTS:
10/5 1976	1	No	Yes

DATA ELEMENT

CATALOGUE NO.:	MNEMONIC NAME:	PROGRAM NAME:
301	SH-FILE-ID	SHF-FILE-ID

DESCRIPTION AND USE: These codes are part of the access key for a Standard History Record. They indicate from which file a History record originated.

DATA TYPE: A/N

PICTURE: X(2)

SOURCE(S): Internally Generated

SUBSYSTEMS:	PWSI	REGS	WAQC	FEDR	VAEX	ENAC	SRVY	OPER	MSIS
INPUT TO:									x
OUTPUT OF:			x		x	x		x	x

ACCEPTABLE VALUES:

VI - Violations File
VE - Variances and Exemptions File
EA - Enforcement Actions File
OM - Operator and Mailing File

EDIT CRITERIA:

ADDITIONAL COMMENTS:
These codes are internally generated in the system and should never be incorrect.

MODEL STATE INFORMATION SYSTEM

DATA ELEMENT DESCRIPTION

DATE: 10/5 1976	**VERSION:** 1	**REQUESTED BY EPA TO BE REPORTED ANNUALLY:** No	**MANDATED FOR MSIS PROCESSING REQUIREMENTS:** Yes

DATA ELEMENT

CATALOGUE NO.: 302	**MNEMONIC NAME:** SH-REC-ID	**PROGRAM NAME:** SHF-RECORD-ID

DESCRIPTION AND USE: Record identification is part of the access key on the Standard History File. It is the unique record identification from the originating record.	**DATA TYPE:** A/N **PICTURE:** X(5)

SOURCE(S):
Internally generated

SUBSYSTEMS:	**PWSI**	**REGS**	**WAQC**	**FEDR**	**VAEX**	**ENAC**	**SRVY**	**OPER**	**MSIS**
INPUT TO:									x
OUTPUT OF:			x		x	x		x	x

ACCEPTABLE VALUES.

The record identification that was on the original MSIS record.

For Violations - Violation ID
For Variances and Exemptions - V or E ID
For Enforcement Actions - Case ID
For Operator and Mailing - Addressee ID

EDIT CRITERIA:

ADDITIONAL COMMENTS:

MODEL STATE INFORMATION SYSTEM

DATA ELEMENT DESCRIPTION

DATE: 10/5 1976	**VERSION:** 1	**REQUESTED BY EPA TO BE REPORTED ANNUALLY:** No	**MANDATED FOR MSIS PROCESSING REQUIREMENTS:** Yes

DATA ELEMENT

CATALOGUE NO.: 303	**MNEMONIC NAME:** SH-CAT-NO	**PROGRAM NAME:** SHF-CATALOGUE-NO

DESCRIPTION AND USE:
A numeric code identifying an MSIS data element.

DATA TYPE: A/N

PICTURE: X(13)

SOURCE(S): Internally generated

SUBSYSTEMS:	PWSI	REGS	WAQC	FEDR	VAEX	ENAC	SRVY	OPER	MSIS
INPUT TO:									x
OUTPUT OF:			x		x	x		x	x

ACCEPTABLE VALUES:

Data element catalogue number specified in the Data Element Dictionary pertaining to the Violations File, the Variances and Exemptions File, the Enforcement Actions File, and the Operator and Mailing File.

EDIT CRITERIA:

ADDITIONAL COMMENTS:
These codes are assigned internally and should never be incorrect.

MODEL STATE INFORMATION SYSTEM

DATA ELEMENT DESCRIPTION

DATE: 10/5 1976	**VERSION:** 1	**REQUESTED BY EPA TO BE REPORTED ANNUALLY:** No	**MANDATED FOR MSIS PROCESSING REQUIREMENTS:** Yes

DATA ELEMENT

CATALOGUE NO.: 304	**MNEMONIC NAME:** SH-CUR-UP	**PROGRAM NAME:** SHF-CUR-UPDATE-DATE

DESCRIPTION AND USE: This is the date as MSIS record was updated. It is used on the MSIS History file to identify changed data elements according to the date of the change.

DATA TYPE: N

PICTURE: 9(5)

SOURCE(S): Internally generated

SUBSYSTEMS:	**PWSI**	**REGS**	**WAQC**	**FEDR**	**VAEX**	**ENAC**	**SRVY**	**OPER**	**MSIS**
INPUT TO:									x
OUTPUT OF:			x		x	x		x	x

ACCEPTABLE VALUES:

A numeric date in Julian format.

EDIT CRITERIA:

ADDITIONAL COMMENTS:

This date is internally generated in the system and should never be incorrect.

II.3.E3

MODEL STATE INFORMATION SYSTEM

DATA ELEMENT DESCRIPTION

DATE: 10/5 1976	**VERSION:** 1	**REQUESTED BY EPA TO BE REPORTED ANNUALLY:** No	**MANDATED FOR MSIS PROCESSING REQUIREMENTS:** Yes

DATA ELEMENT

CATALOGUE NO.: 305	**MNEMONIC NAME:** SH-LST-UP	**PROGRAM NAME:** SHF-LAST-UPDATE-DATE

DESCRIPTION AND USE: This is the date on which the record was previously updated. (Prior to the current update) this is used to establish an audit trail.

DATA TYPE: N

PICTURE: 9(5)

SOURCE(S): Internally generated

SUBSYSTEMS:	**PWSI**	**REGS**	**WAQC**	**FEDR**	**VAEX**	**ENAC**	**SRVY**	**OPER**	**MSIS**
INPUT TO:									x
OUTPUT OF:			x		x	x		x	x

ACCEPTABLE VALUES:

Numeric date in Julian format

EDIT CRITERIA:

ADDITIONAL COMMENTS: This date is internally generated in the system and should never be incorrect. The date contained in the last update date indicated the most previous date on which the source record was changed. (The date of change prior to this update).

II.3.E3

MODEL STATE INFORMATION SYSTEM

DATA ELEMENT DESCRIPTION

DATE: 10/5 1976	**VERSION:** 1	**REQUESTED BY EPA TO BE REPORTED ANNUALLY:** No	**MANDATED FOR MSIS PROCESSING REQUIREMENTS:** Yes

DATA ELEMENT

CATALOGUE NO.: 306	**MNEMONIC NAME:** SH-OLD-VAL	**PROGRAM NAME:** SHF-OLD-VALUE

DESCRIPTION AND USE: This is the value of the data element on an MSIS record before an update transaction changed its value. It is used in the Standard History file for an audit trail.	**DATA TYPE:** A/N **PICTURE:** X(30)

SOURCE(S): Internally generated

SUBSYSTEMS:	**PWSI**	**REGS**	**WAQC**	**FEDR**	**VAEX**	**ENAC**	**SRVY**	**OPER**	**MSIS**
INPUT TO:									x
OUTPUT OF:			x		x	x		x	x

ACCEPTABLE VALUES:

Any alphanumeric character string

EDIT CRITERIA:

ADDITIONAL COMMENTS:

MODEL STATE INFORMATION SYSTEM

DATA ELEMENT DESCRIPTION

DATE: 10/5 1976	**VERSION:** 1	**REQUESTED BY EPA TO BE REPORTED ANNUALLY:** No	**MANDATED FOR MSIS PROCESSING REQUIREMENTS:** Yes

DATA ELEMENT

CATALOGUE NO.: 307	**MNEMONIC NAME:** SH-NEW-VAL	**PROGRAM NAME:** SHF-NEW-VALUE

DESCRIPTION AND USE: This is the value of a data element on an MSIS record after an update transaction changed its value. It is used in the Standard History File for an audit trail.	**DATA TYPE:** A/N **PICTURE:** X(30)

SOURCE(S):
Internally generated

SUBSYSTEMS:	**PWSI**	**REGS**	**WAQC**	**FEDR**	**VAEX**	**ENAC**	**SRVY**	**OPER**	**MSIS**
INPUT TO:									x
OUTPUT OF:			x		x	x		x	x

ACCEPTABLE VALUES:

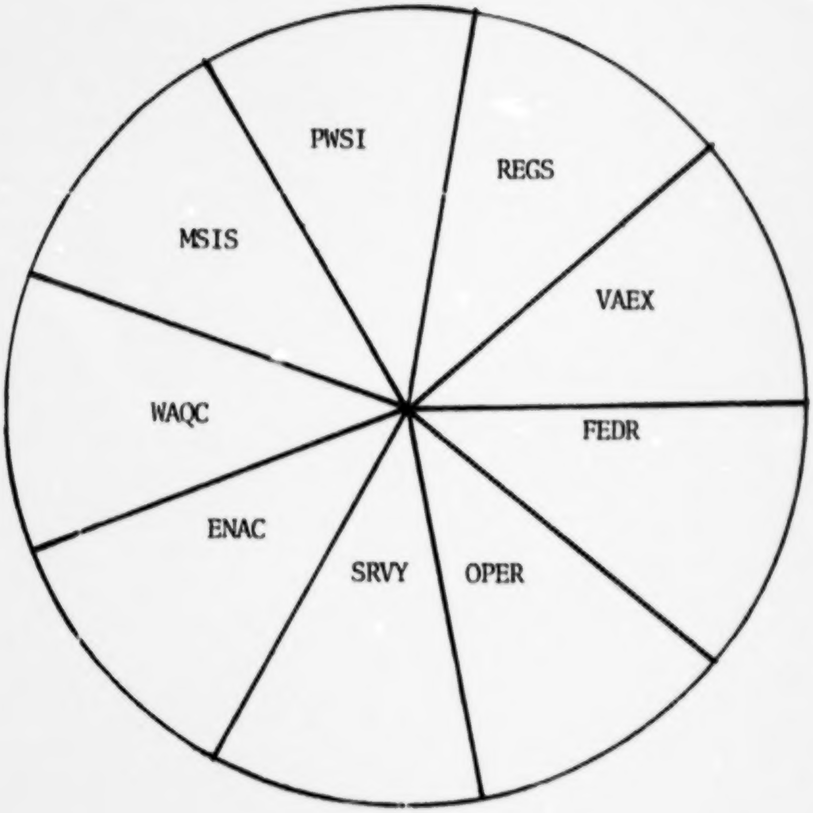
Any alphanumeric character string

EDIT CRITERIA:

ADDITIONAL COMMENTS:

MSIS Subsystems

1. Name the nine MSIS subsystems, placing a name in each section of the circle.


PWSI
REGS
MSIS
VAEX
WAQC
FEDR
ENAC
SRVY
OPER

II.1.A2

MSIS Subsystems

Match the subsystems with their functions.

Subsystems

PWS Inventory (PWSI)

Regulations (REGS)

Operator and Mailing (OPER)

Variances and Exemptions

Enforcement Actions (ENAC)

Sanitary Survey (SRVY)

Standard Processing (MSIS)

Federal Reporting (FEDR)

Water Quality Compliance (WAQC)

Functions

1. Gives the computer information to determine violations.
2. Maintains a list of certain distributors of water.
3. Selects public water systems that need a thorough examination.
4. Maintains the addresses of persons interested in water quality.
5. Maintains the information on PWSs that have special conditions.
6. Maintains information on the activities ensuring compliance.
7. Creates special files of interest to EPA.
8. Records samples, analyses, and violations.
9. Performs common functions among subsystems.

MSIS Files

1. List the files which contain various kinds of information on PWSs.

   PWF, Public Water File

   VEF, Variances and Exemption File

   EAF, Enforcement Actions File

   OMF, Operator and Mailing File

   VIF, Violations File

   DVF, Deviations File

2. List the files which contain information on water quality.

   SAF, Sample and Analysis File

   PSF, Periodic Sample File

3. List the files which contain information on the history of transactions.

   PHF, Public History File

   SHF, Standard History File

II.1.A4

MSIS Tables

1. List the six tables.

2. Match the table with the subsystem that creates it.

EMT, Error Message Table

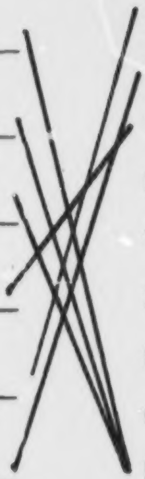
CVT, Code Value Table

DET, Data Element Table

LBT, Laboratory Table

RGF, Regulations File

PWT, Public Water Table



REGS
PWSI
WAQC
FEDR
VAEX
ENAC
SRVY
OPER
MSIS

MSIS Tables

1. Name the table which performs the function stated.
    1. Allows the computer to inform the user of problems it encounters. EMT, Error Message Table
    2. Provides the computer with the information on what is acceptable for a particular field. CVT, Code Value Table
    3. Supplies the computer with the location of particular information that is referred to by the user. DET, Data Element Table
    4. Supplies the computer with abbreviated information on Public Water Systems. PWT, Public Water Table
    5. Provides the computer with the information on acceptable analyzers of sample data. LBT, Laboratory Table
    6. Provides the computer with the information necessary to determine MCL and sampling violations and to set up sampling schedules. RGF, Regulations File

Input Forms

1. List the four input form categories.	2. Specify two input forms per category.
	PROC, SORT, SEL1, SEL2
Processing Option	
	EMT, CVT, DET, LBT, RGF
Table Creation	
	VAEX, ENAC, OPER, PWSI, WAQC
Record Creation and Maintenance	
	Bacteriological and Turbidity
Water Quality Transactions	Chemical and Radiological
	Bacteriological and Turbidity Summary
	Sample Deletion Transactions - PSF
	Sample Deletion Transactions - SAF

Output Reports

1. Specify the kind of output report that will supply the information to answer the questions.
    1. How many PWSs on my Public Water File (PWF)? Statistical
    2. Is the MCL for arsenic on the RGF correct? Input
    3. Why didn't I get the report I requested? Error
    4. What violations occurred last month? Informational
    5. Who should be sending in sample analyses? Informational
    6. What are the acceptable values for "Operator Type"? Input
    7. What was the percentage increase in our mailing list? Statistical
    8. What data do I need to complete the VEF for the last update? Error
2. Which kind of report is probably the most important to the user?
   Informational

II.3.A1

User's Manual

List by subsystem all the possible informational reports that may be produced using MSIS.

Subsystem	Informational Reports
PWSI	1. PWSI.300 PWSI.308 Condensed
	2. PWSI.302 PWSI.314 Production and Capacity Data
	3. PWSI.301 PWSI.315 State Discretionary Data
	4. PWSI.303 Comprehensive
	5. PWSI.317 Public History File Selection
	6. PWSI.306 Public History File Purge
WAQC	1. WAQC.326 Turbidity Warnings
	2. WAQC.326 Inorganic Chemical Warnings
	3. WAQC.326 Organic Chemical Warnings
	4. WAQC.326 Bacteriological Warnings
	5. WAQC.326 Gross Alpha Warnings
	6. WAQC.326 Gross Beta Warnings
	7. WAQC.306 Chemical MCL Violations
	8. WAQC.309 Radiological MCL Violations
	9. WAQC.307 Bacteriological MCL Violations
	10. WAQC.308 Turbidity MCL Violations
	11. WAQC.310 Chemical Sampling Violations
	12. WAQC.313 Radiological Sampling Violations
	13. WAQC.311 Bacteriological Sampling Violations
	14. WAQC.312 Turbidity Sampling Violations
	15. WAQC.325 Operation Report Violations
	16. WAQC.320 Compliance Summary
	17. WAQC.315 Sample and Analysis Purge
	18. WAQC.321 Summary of Chemical Analysis
	19. WAQC.322 Summary of Radiological Analysis
	20. WAQC.323 Summary of Bacteriological Analysis
	21. WAQC.324 Summary of Turbidity Analysis

Subsystem	Informational Reports
WAQC (con't)	22. WAQC.329 Mailing Labels
	23. WAQC.330 Monthly Operations Report Update Form
	24. WAQC.319 Chemical/Radiological Scheduling
MSIS	1. MSIS.305 Purge of the Standard History File
	2. MSIS.307 Selected SHF
VAEX	1. VAEX.302 VAEX.303 Compliance Schedule
	2. VAEX.304 VAEX.305 Compliance in ARRears
	3. VAEX.306 Condensed
	4. VAEX.307 VAEX.308 Case History
ENAC	1. ENAC.300 Case History
	2. ENAC.301 Condensed
SRVY	1. SRVY.300 Priority
	2. SRVY.301 Schedule
OPER	1. OPER.300 Operators Activity
	2. OPER.301 Certified Operators
	3. OPER.303 Addressees Activity
	4. OPER.302 Mailing Distribution
	5. OPER.304 Mailing Labels

PWSI020.080 **MODEL STATE INFORMATION SYSTEM** PWSI.107

PUBLIC WATER SYSTEM INVENTORY SUBSYSTEM

SELECTION FORM - DEFINITION OF DATA ELEMENTS

CARD ID	DATA ELEMENT MNEMONIC NAME	DATA ELEMENT COMPARATIVE VALUE	DATA ELEMENT LOGIC ID NO.
SEL1 1-4	PW-PL-POPL 5-14	100000 15-29	01 30-31
DUP 1 - 4	PW-PL-SOCO	S	02
.	PW-PL-TYPE	C	03
.	PW-S-WUCL	Y	04
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PREPARED BY ______________________ DATE __/__/__

APPROVED BY ______________________ DATE __/__/__

II.3.A2

PWSI020.080 PWSI.100

MODEL STATE INFORMATION SYSTEM

PUBLIC WATER SYSTEM INVENTORY SUBSYSTEM

SELECTION FORM - DEFINITION OF LOGIC FOR SELECTION

RELATION SYMBOLS: LT = LESS THAN
EQ = EQUAL
GT = GREATER THAN
NL = NOT LESS THAN
NG = NOT GREATER THAN
NX = NOT EXISTS(EMPTY)

CARD ID	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL
S E L 2 1-4	01	GT 5-6	02	EQ 7-8	03	EQ 9-10	04	☐☐ 11-12
	05	☐☐ 13-14	06	☐☐ 15-16	07	☐☐ 17-18	08	☐☐ 19-20
	09	☐☐ 21-22	10	☐☐ 23-24	11	☐☐ 25-26	12	☐☐ 27-28
	13	☐☐ 29-30	14	☐☐ 31-32	15	☐☐ 33-34	16	☐☐ 35-36
	17	☐☐ 37-38	18	☐☐ 39-40	19	☐☐ 41-42	20	☐☐ 43-44
	21	☐☐ 45-46	22	☐☐ 47-48	23	☐☐ 49-50	24	☐☐ 51-52
	25	☐☐ 53-54	26	☐☐ 55-56	27	☐☐ 57-58	28	☐☐ 59-60
	29	☐☐ 61-62	30	☐☐ 63-64	31	☐☐ 65-66	32	☐☐ 67-68
	33	☐☐ 69-70	34	☐☐ 71-72	35	☐☐ 73-74		

PREPARED BY ______________________________ DATE __/__/__

APPROVED BY ______________________________ DATE __/__/__

PW31020.080 PW31.108

MODEL STATE INFORMATION SYSTEM

PUBLIC WATER SYSTEM INVENTORY SUBSYSTEM

SELECTION FORM - DEFINITION OF LOGIC FOR SELECTION

RELATION SYMBOLS: LT = LESS THAN
EQ = EQUAL
GT = GREATER THAN
NL = NOT LESS THAN
NG = NOT GREATER THAN
NX = NOT EXISTS(EMPTY)

CARD ID	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL
SEL2 1-4	01	☐☐ 5-6	02	☐☐ 7-8	03	EQ 9-10	04	EQ 11-12
	05	☐☐ 13-14	06	☐☐ 15-16	07	☐☐ 17-18	08	☐☐ 19-20
	09	☐☐ 21-22	10	☐☐ 23-24	11	☐☐ 25-26	12	☐☐ 27-28
	13	☐☐ 29-30	14	☐☐ 31-32	15	☐☐ 33-34	16	☐☐ 35-36
	17	☐☐ 37-38	18	☐☐ 39-40	19	☐☐ 41-42	20	☐☐ 43-44
	21	☐☐ 45-46	22	☐☐ 47-48	23	☐☐ 49-50	24	☐☐ 51-52
	25	☐☐ 53-54	26	☐☐ 55-56	27	☐☐ 57-58	28	☐☐ 59-60
	29	☐☐ 61-62	30	☐☐ 63-64	31	☐☐ 65-66	32	☐☐ 67-68
	33	☐☐ 69-70	34	☐☐ 71-72	35	☐☐ 73-74		

PREPARED BY ______________________ DATE __/__/__

APPROVED BY ______________________ DATE __/__/__

Page 1 Positions	
5-6	Sort Sequence field not numeric
7-16	Sort option mnemonic name is invalid
17	
18-19	
20-29	Sort option mnemonic name is invalid
30	
31-32	
33-42	
43	
44-45	Non-consecutive sort sequence
46-55	Sort option mnemonic name is invalid
56	
57-58	
59-68	
69	

Page 2

Positions	
5-6	Sort sequence fields have the same sequence number
7-16	
17	Sort mode is not A or D
18-19	Non-consecutive sort sequence values
20-29	Maximum sort key size has been exceeded
30	
31-32	Non-consecutive sort sequence value
33-42	
43	
44-45	Sort sequence field not numeric
46-55	Sort option mnemonic name is invalid
56	
57-58	Sort sequence number greater than 10
59-68	Sort option mnemonic name is invalid
69	Sort mode is not A or D

II.2.T1
22T1
(1-4)

POST-TEST

MSIS SUBSYSTEMS

Name: ______________________ (5-30)

Postal Code ____ (31-2)

Date ___/___/___ Month Day Year (33-8)

1. Circle the purpose of the Safe Drinking Water Act:

(39) a. Monitor drinking water quality
(40) b. Report to the federal government drinking water quality
(41) c. Assure the public is provided with safe drinking water

2. Circle the three phrases which describe a batch computer system:

(42) a. On-line
(43) b. Accumulates data
(44) c. Instantaneous sending of data
(45) d. Keypunch cards
(46) e. After-the-fact

3. How many subsystems does MSIS have? (47)______________________

4. Match the types of input forms with their function:
(More than one function may be appropriate)

Form

a. Processing option
b. Table creation
c. Record creation & maintenance
d. Water quality transactions

Function

(48) ____Enter data to MSIS tables
(49) ____Enters PWS-related data to files
(50) ____Enters sample and analysis data
(51) ____Enables the user to specify needed reports
(52) ____Enables the user to specify needed PWS listing

5. Circle the correct answer. REGS, MSIS, and SRVY subsystems do not have record creation and maintenance forms because:

(53) a. they don't have any files
(54) b. they only print reports
(55) c. they don't maintain PWS data

6. Match the four kinds of output reports with the type of information each supplies:

Report

a. statistical
b. error
c. input
d. informational

Information

(56) ____What violations occurred yesterday
(57) ____Number of PWSs on the Public Water File
(58) ____What violations occurred last month
(59) ____Is the MCL for arsenic on the Regulations File correct?
(60) ____Why didn't I get the report I requested?

7. Match each subsystem with its appropriate function:

Subsystem

a. Regulations
b. Enforcement Actions
c. Water Quality Compliance
d. Public Water System Inventory
e. Variances & Exemptions
f. Standard Processing

Function

(61) ____Automatically translates the PWS Inventory File into MSIS format
(62) ____Maintains data on PWS's having special conditions
(63) ____Checks analyses of water quality to see if authorized methods were used
(64) ____Performs common functions for other subsystems
(65) ____Contains the criteria used to determine violations
(66) ____Keeps information on compliance actions

8. Circle T (True) or F (False) for the following statements:

T F (67) MSIS is a subsystem name as well as the system name.

T F (68) There are ten subsystems in MSIS.

T F (69) FEDR creates printed reports for the federal government.

T F (70) A summary of State enforcement actions is reported annually.

T F (71) Tables and files are both accessible to the user for selecting reports.

T F (72) Water quality transaction input forms are used to enter analytical results.

T F (73) Any laboratory may submit analysis results.

9. Rate your current level of knowledge about MSIS:

(74) None
(75) A little
(76) Some
(77) Quite a bit
(78) A great deal

MODEL STATE INFORMATION SYSTEM

PART IV

COURSE REFERENCE MATERIAL

GLOSSARY

Terms are included in this glossary only if their meanings differ from those found in a standard English language dictionary.

Analysis:

The separation of any abstract entity or material into its constituent elements, such as chemical-intentionally produced decomposition or separation of materials into their ingredients to find their kind or quality.

Analysis Method:

The method or technique utilized to obtain analysis results.

Analytical Techniques:

The methods used to determine the components of a substance, especially raw water.

Batch Processing:

A procedure in which a number of transactions, for example on keypunched cards, are accumulated before being processed together.

Check Sampling:

The act of acquiring additional quantities of water for analysis over and above the regular samples due to the suspicion of violating maximum contaminant levels.

Code:

A system used for brevity of communication in which arbitrarily chosen words, letters, or symbols are assigned definite meanings.

Computer:

A machine which accepts input data, processes it, and gives output data.

Computer Program:

A sequence of computer-readable instructions used in conjunction with appropriate data to perform specified logical tasks.

Correction:

Additions, subtractions, or changes to a computer file.

Course:

All content taught in one individual MSIS training program volume. A course is subdivided into units.

Data:

Raw facts or statistics which alone have little or no meaning, but as a group allow some meaningful relationships to be drawn.

Data Element:

An identifiable item of information within a record. See the Data Element Dictionary for all data elements used in MSIS.

Data Processing:

The act of manipulating information to obtain a desired result, especially with the use of a computer.

Economical:

Of or pertaining to the financial reasons for granting variances and exemptions.

Enforcement:

The act of creating and maintaining compliance using coercive methods.

Enforcement Action:

An act intended to generate compliance.

Exemption:

Authorized waiver of an MCL requirement due to compelling factors, such as need for a PWS to design and build effective treatment facilities.

Field:

See data element.

File:

A collection of records systematically arranged to facilitate quick reference; may be stored on magnetic tape or magnetic disc.

Goal:

A general achievement toward which effort is directed.

Gross Alpha:

A group of substances which emit Alpha particle radiation.

Gross Beta:

A group of substances which emit Beta particle radiation.

Hardware:

The physical equipment in a data processing system (contrasted with software).

Information:

Data that has been processed to obtain specific results which increase knowledge of the recipient and is used as the basis for decision making.

Inorganic:

Of or pertaining to substances that are not hydrocarbons or their derivatives.

Input:

Information which is specially prepared for acceptance by computer programs. Usually written down on special forms, then put into machine-readable form by, for example, keypunching.

Integrity:

Presumed reliability of data.

Internal:

Data processing occurring within the computer automatically according to instructions from computer programs.

Inventory:

A detailed, descriptive list, for example, of Public Water Systems.

Magnetic Disc:

A device which stores data on the magnetizable surfaces of one or more rotating discs, which look like a stack of phonograph records.

Magnetic tape:

A device which stores data on the magnetizable surface of a long strip of tape (the tape is typically 1 inch wide and 2400 feet long).

Maintain:

Actions taken to ensure up-to-date computer files.

Management Information System:

An organized method of maintaining facts pertinent to the governing of the operations of an organization.

Model State Information System:

(MSIS) a batch computer system designed to (1) maintain records on public water systems and the quality of the water they supply, and (2) prepare reports.

Monitor:

The acts of (1) a PWS observing and checking water quality or (2) a State observing and checking PWSs.

National Inventory File:

A computerized list of many public water systems in the United States; previously used to monitor water quality.

Objective:

A specific achievement that efforts are intended to attain.

Online Processing:

A procedure for inputting data computer whenever needed for immediate data processing, often by typewriter terminal.

Operator:

One who runs a public water system.

Organic:

Of or pertaining to substances that are hydrocarbons or their derivatives.

Output:

Any information passed from the computer.

Primacy:

Primary enforcement responsibility for carrying out the Safe Drinking Water Act of 1974.

Public Water System (PWS):

A set of components for the provision of piped water to persons for human consumption, if such facility has at least fifteen service connections or regularly serves at least twenty-five individuals 60 or more days per year.

Purge:

To remove from a computer those items no longer desired.

Raw Water:

Water at the source before any treatment.

Record:

A logical group of data elements.

Regulations:

Rules created by EPA within the guidelines established by the SDWA and having the same authority.

Report:

Information formatted by the computer in either human-readable form (such as a printed report) or machine-readable form (such as a magnetic tape).

Sample:

A portion of the whole to represent the whole, especially water.

Sanitary Survey:

An on-site review of the water source, facilities, equipment, operation, and maintenance of a public water system for the purpose of evaluating the adequacy of such source for producing and distributing safe drinking water.

Selection Process:

The method used by MSIS for selecting information from a computer file for use in a report. Many different criteria can be used in the selection of the data.

Software:

The computer programs required for the computer to work.

Subsystem:

A subset of the MSIS computer system. There are nine MSIS subsystems.

System:

A method or methods of accomplishing a function or functions, especially with a computer.

Table:

A computer file of brief information usually set up in logical relationships to permit quick access, often on magnetic disc.

Turnaround Document:

A form containing computer-printed information which needs additional information written on it; called "turnaround" since it is both an output and an input.

Unit:

A subset of teaching material within a course.

Variance:

Authorized deviation from an applicable national drinking water regulation because characteristics of the raw water source cannot be corrected by available means.

List of Abbreviations

Abbreviation	Meaning
BIP	Background Informational Package
CVT	Code Value Table
DET	Data Element Table
DVF	Deviations File
EAF	Enforcement Actions File
EMT	Error Message Table
ENAC	Enforcement Actions Subsystem
EPA	Environmental Protection Agency
FEDR	Federal Reporting Subsystem
LBT	Laboratory Table
MCL	Maximum Contaminant Level
MSIS	Model State Information System; also MSIS Standard Processing Subsystem
NIF	National Inventory File
NIPDWR	National Interim Primary Drinking Water Regulations
OMF	Operator and Mailing File
OPER	Operator and Mailing Subsystem
OWS	Office of Water Supply
PSF	Periodic Sample and Analysis File
PWF	Public Water System File
PWS	Public Water System
PWSI	Public Water System Inventory Subsystem
PWT	Public Water System Table
REGS	Regulations Subsystem

RGF	Regulations File
SAF	Sample and Analysis File
SDWA	Safe Drinking Water Act
SHF	MSIS Standard History File
SRVY	Sanitary Survey Subsystem
VAEX	Variances and Exemptions Subsystem
VEF	Variances and Exemptions File
VIF	Violations File
WAQC	Water Quality Compliance Subsystem

ANNOTATED BIBLIOGRAPHY

Bolton, Charles K., and Boyer, Ronald K., *One-Way and Two-Way Communication in the Classroom*. Institute for Research and Training in Higher Education, University of Cincinnati, Cincinnati, Ohio, September 20, 1971.

Both types of communication are compared. Differences in the process of communication in each instance are compared. The relationship to teaching and psychological size is made, and the teacher's individual style and experimental new behavior are discussed.

Cushman, Frank, *Training Procedures*. Wiley and Sons, Inc., New York, 1943.

Four common fallacies of training packages are given. He lists and briefly describes sixteen training methods and devices.

Davis, Larry N., and McCallon, Earl, *Planning, Conducting and Evaluating Workshops*. Learning Concepts, 1974.

This book tends to be very perscriptive - almost a check list of do's and don'ts for conducting workshop sessions. It is not theoretical but should make a handy reference for quick review during any workshop phase - planning, conducting, or evaluating.

Davis, R.H., Alexander, L.T., and Yelon, S.L., *Learning System Design: An Approach to the Improvement of Instruction*. McGraw Hill Book Co., New York, 1974.

A good overview of instructional systems design. An orientation is not provided to any particular content area but the general approach to systems design is presented. Individuals must apply the information to their specific needs. The semi-programmed text, with sensible definitions, is easy to read.

Dubin, Robert, and Taveggia, Thomas C., *The Teaching-Learning Paradox*. University of Oregon, Eugene, Oregon, 1968.

The literature dealing with comparative studies of teaching techniques from 1924 to 1965 is covered. Comparisons are made on face-to-face methods (discussion, lecture, and combinations) and both supervised and unsupervised self-study. An important conclusion was reached that in no instance were significant differences in teaching methods found when results were measured by final examinations on course content.

Emerson, Lynn A., *How to Prepare Training Manuals*. University of the State of New York, Albany, New York, 1952.

Eight steps in the process of developing instructional materials are outlined along with six basic principles of learning. A useful aspect that is described are eight good, basic teaching practices which should be implemented in any teaching method.

Glaser, Robert, *Training Research and Education*. Wiley and Sons, Inc., New York, 1962.

Goldstein, Irwin L., *Training: Program Development and Evaluation*. Brooks/Cole Publishing Company, Monterey, California, 1974.

The advantages and disadvantages of practically every type of training method - lecture, on-the-job training (OJT) simulation, games, laboratory, films, TV, etc, are discussed. The preconditions for training, requisites for maximum transfer of training, and trainee motivation are covered thoroughly and in great detail. Actual studies are cited to substantiate statements. This text provides a good overview of the training process (from assessing instructional needs, deriving objectives selecting training media, conducting training, developing criteria, pretesting, monitoring training, evaluating training, to evaluating transfer of training). A section on behavioral objectives, listing five characteristics, is provided.

Grasha, Anthony F., *Developing Alternative Teaching Methods Through An Analysis of Instructional Goals*. Institute for Research and Training in Higher Education, University of Cincinnati, Cincinnati, Ohio, February 15, 1974.

This text provides a practical and simple approach which allows one to design a course (or training package) which is compatible with one's goals. A distinction between content and non-content goals is made and a summary is given of eight common course designs.

Knowles, Malcom S., *The Modern Practice of Adult Education*. Association Press, New York, 1972.

The following assumptions about adults are made: they are moving from dependent to a self-directed state; they have a large body of experience to draw on in their learning; they tend to be problem centered. These assumptions, together with suggestions on diagnosis versus evaluation and learning environment, should be helpful in establishing a relationship between the trainer and adult trainee that is conducive to learning.

McKeachie, Wilbert J., *Teaching Tips: A Guidebook for the Beginning College Teacher*. Lexington, Mass., D. C. Heath, 1969. Although designed for the new college teacher, much practical material on dealing with people in the "here and now" of the training environment is presented. The direct approach used here makes easy reading and a quick reference guide. Citations identify the literature that is appropriate to each area discussed.

EXTRACTS FROM
MSIS DOCUMENTS

II. System Overview

A. Introduction

The Model State Information System (MSIS) is a computer based information system designed to be used by the individual states and regional offices to meet the requirements of the "National Interim Primary Drinking Water Regulations" (December, 1974). These regulations were formulated by the U.S. Environmental Protection Agency under the authority of the Safe Drinking Water Act of 1974.

Using as a basis the Program Evaluation Requirements, Concepts and Plans for EPA Safe Drinking Water Program (Office of Water Supply, EPA, October 1975), American Management Systems, Inc. (AMS), performed a feasibility study and general systems design of the Model State Information System (June 15, 1976). Detail systems design, programming, testing, and documentation was carried out by SouthWestern Ohio Regional Computer Center (SWORCC).

MSIS is made up of five required subsystems and four optional subsystems. The five required subsystems are:

Public Water System Inventory Subsystem (PWSI)
Regulations Subsystem (REGS)
Water Quality Compliance Subsystem (WAQC)
Federal Reporting Subsystem (FEDR)
Standard Processing Subsystem (MSIS)

The four optional subsystems are:

Variances and Exemptions Subsystem (VAEX)
Enforcement Actions Subsystem (ENAC)
Sanitary Survey Subsystem (SRVY)
Operator and Mailing Subsystem (OPER)

B. General System Approach

The Model State Information System (MSIS) is designed to be standard enough that the individual states can use it on their various computer systems. At the same time, MSIS is flexible enough that the states may select segments of the system that fit their needs and may even easily modify the system to add to its functions.

Modularity of MSIS allows for flexibility. In order to give the States and regions the capability to fulfill their basic responsibilities to OWS, a minimum of five subsystems are required to do MSIS processing. They are the Public Water System Inventory Subsystem, the Water Quality Compliance Subsystem, the Regulations Subsystem, the Federal Reporting Subsystem, and the Standard Processing Subsystem. Four additional subsystems may be added, each at the discretion of the State or Region: the Variances and Exemptions Subsystem, the Sanitary Survey Subsystem, the Enforcement Actions Subsystem, and the Operator and Mailing Subsystem. In this way, the state may selectively add to or replace functions they currently have.

Within the subsystems, there is a built-in flexibility allowing the states to mold the system to better meet their individual needs. As an example, the Regulations Subsystem allows the states to input state regulations in addition to the required federal regulation. Flexibility is also given in report generation by allowing the state to select what information is to be contained on fixed format reports and in what order the report is produced. It must be emphasized, however, that any major changes may also require programming changes.

To contribute to the uniformity of MSIS, the following functions were standardized:

- File Maintenance
- Error Processing
- History Processing
- Report Generation
- Data Editing

1. File Maintenance

Adds:

The initial creation of a record on an MSIS file is accomplished with an ADD trasaction (code 00) which must contain all information necessary for processing by MSIS before it can be accepted.

Updates:

Existing data is modified by Update transactions. New data is edited and applied to the files field by field. An erroneous transaction field will not cause the entire transaction to be rejected. Instead, valid fields will be updated and only erroneous fields will need to be corrected and reentered. Since most update transactions refer to several data elements, the following approach is used:

a. If a data element field is blank, the data element on the file is not modified.

b. If the data element field contains a "$" in the leftmost position, the data element is reinitialized (existing data is replaced with blanks or zeros).

c. If transaction code "99" is used, the entire record is flagged as deleted. The only exception is in the Water Quality Compliance Subsystem, program WAQC010, where the delete transaction code is "01".

d. All other values can be used to replace the current value of the data element in the file provided that the new data is valid. Refer to the Data Element Dictionary (DED) to find the edit criteria for data elements.

2. Error Processing

Prior to actual processing, however, errors in processing options records must be handled in the individual programs. Errors created during actual processing of create and update modules in MSIS are handled by Standard Error Processing, a part of the Standard Processing Subsystem (MSIS). These errors created while updating or maintaining files, create the Standard Error File (SEF).

The SEF is processed by Standard Error Processing program (MSIS010) using the Error Message Table (EMT), to interpret the errors, and creating the Data Entry Error Report (Exhibit MSIS.313).

The Optional Error File (OEF) is an optional file which may be produced during Standard Error Processing so that the errors can be corrected by some text editing facility.

3. History Processing

In order to maintain an audit trail of the more important files of MSIS, two history processes are used. The Standard History Processing programs (MSIS.020,040,050), a part of the Standard Processing Subsystem, are used to record and make use of a history of all changes made to the Violations File (VIF), the Variances and Exemptions File (VEF), the Enforcement Actions File (EAF), and the Operator and Mailing File (OMF). These history records are maintained on the Standard History File (SHF).

The Public History File (PHF) is used to maintain a similar audit trail for the more complicated Public Water File (PWF) within the Public Water System Inventory Subsystem, (PWSI.070, 080, 090).

4. Report Generation

To permit the user to select and order records from files according to very flexible criteria, standard selection and sort methods are used throughout MSIS. Standard selection and sort processing options formats are used in all MSIS programs.

The selection process allows a maximum of thirty-five (35) data elements to be used as keys to determine if the data record qualifies to be selected. The user, therefore, can have an ample range for selecting records to be reported.

Additionally, the user has the option to have the records sorted in a meaningful sequence for the generation of a report. The user must keep in mind the length of the data elements to be used for sorting. A maximum of thirty (30) characters, accumulating all the lengths of the data elements, is allowed with no one length being greater than fifteen (15). Any data element with a length greater than fifteen will only use the first fifteen characters of the data element for sorting.

5. Data Editing

Some edit criteria is contained in the Code Value Table (CVT). The CVT contains acceptable data values in separate files for the eight subsystems of MSIS and one file of common data element values shared by two or more subsystems. (These common data elements are listed in Appendix A of the Data Element Dictionary). The CVT is used whenever possible to determine acceptable values.

C. Naming Conventions

1. File Name Abbreviations

Each file and table has associated with it a three letter abbreviation used in the full, programming name as an abbreviation for the file and a two letter mnemonic prefix used in the files' data element mnemonic names.

File Name	File ID	Mnemonic Prefix	Subsystem
Code Value Table	CVT	CV	MSIS
Compliance Status File	CSF	(none)	WAQC
Data Element Table	DET	DE	MSIS
Deviations File	DVF	(none)	FEDR
Enforcement Actions File	EAF	EA	ENAC
Error Message Table	EMT	EM	MSIS
Laboratory Table	LBT	LB	WAQC
Optional Error File	OEF	OE	MSIS
Operator and Mailing File	OMF	OM	OPER
Public History File	PHF	PH	PWSI
Periodic Sample File	PSF	PS	WAQC
Public Water File	PWF	PW	PWSI
Public Water Table	PWT	PT	PWSI
Regulations File	RGF	RG	REGS
Sample Analysis File	SAF	SA	WAQC
Standard Error File	SEF	SE	MSIS
Standard History File	SHF	SH	MSIS
Variances and Exemptions File	VEF	VE	VAEX
Violations File	VIF	VI	WAQC

2. COBOL Programming Names

The file and table data element names used in programming are assigned using the three letter file ID followed by a dash and a one (1) to twenty-six (26) character descriptive name. Example: PWF-PLANT-POPULATION-SERVED. (ANSI COBOL allows a maximum of thirty characters for a data name.)

3. Mnemonic Names

The Data Elements of some of the permanent files and tables have mnemonic names in addition to the COBOL programming names. The mnemonic name is formed using the two letter mnemonic prefix followed by a dash and a one (1) to seven (7) character abbreviation of the descriptive portion of the corresponding programming name. Example: PW-PL-POPL for PWF-PLANT-POPULATION-SERVED. The mnemonic names are used when filling in the SORT and SELECTION processing option forms, and also appear on the Standard Error Report.

4. Exhibits

Exhibit numbers are prefixed by the four letter subsystem prefix followed by:

A. 100-199 for input forms

B. 200-299 for record definitions

C. 300-399 for report layouts

D. 400-499 for turnaround documents

D. Files and Tables

The following are the permanent files and tables of MSIS. They are listed by the subsystem responsible for the files' creation.

1. Public Water System Inventory Subsystem (PWSI)

a. Public Water File (PWF), Exhibit PWSI.200, Data Element Catalogue Numbers 145 through 264, 701 and 702: The PWF is a variable length, sequential access file of detailed information about all Public Water Systems in the state.

b. Public Water Table (PWT), Exhibit PWSI.201, Data Element Catalogue Numbers 265 through 278, and 703: The PWT is a fixed length, direct access file of selected information from the PWF used primarily for supplying information on reports throughout MSIS.

c. Public History File (PHF), Exhibit PWSI.202, Data Element Catalogue Numbers 310 through 318: The PHF is a fixed length, sequential access history file of all modifications to the PWF used as an audit trail of the file.

2. Regulations Subsystem (REGS)

a. Regulations File (RGF), Exhibit 250 through 257, Data Element Catalogue Numbers 1 through 144: The RGF is a fixed length, sequential access file of all state and federal drinking water quality regulations.

3. Water Quality Compliance Subsystem (WAQC)

a. Periodic Sample File (PSF), Exhibit WAQC.252, Data Element Catalogue Numbers 399 through 429, 817 and 818, and 900 through 902: The PSF is fixed length, sequential access file of all water quality sample transactions.

b. Sample Analysis File (SAF), Exhibit WAQC.254, Data Element Catalogue Numbers 356 through 392, 807 through 816. The SAF is a fixed length, sequential access file containing a record for each chemical or radiological sample and a summary record of bacteriological and turbidity samples. The SAF is a summary of the PSF used to reduce the great numbers of sample records kept.

c. Violations File (VIF), Exhibit WAQC.255, Data Element Catalogue Numbers 326 through 355 and 800 through 806, and 819. The VIF is a fixed length, sequential access file of the violations to the drinking water regulations.

d. Laboratory Table (LBT), Exhibit WAQC.250, Data Element Catalogue Numbers 319 through 325 and 820: The LBT is a fixed length, direct access file of laboratories authorized to analyze water samples.

e. Compliance Status File (CSF), Exhibit WAQC.257, Data Element Catalogue Numbers 516 through 533. The CSF is a fixed length, sequential access file of information which deals with compliance determination.

4. Federal Reporting Subsystem (FEDR)

a. Deviations File (DVF), Exhibit FEDR.202, Data Element Catologue Numbers 492 through 511: The DVF is a fixed length, sequential access file of violations, variances, and exemptions. The DVF is created in FEDR for submission to EPA.

5. Standard Processing Subsystem (MSIS)

a. Code Value Table (CVT), Exhibit MSIS.206, Data Element Catalogue Numbers 279 through 284: The CVT is a fixed length, sequential access file of data element values used in editing in MSIS.

b. Data Element Table (DET), Exhibit MSIS.201, Data Element Catalogue Numbers 285 through 293: The DET is a fixed length, sequential access file of data element information used in MSIS.

c. Error Message Table (EMT), Exhibit MSIS.205, Data Element Catalogue Numbers 294 through 297: The EMT is a fixed length, sequential access file of errror codes and associated messages used in standard error processing.

d. Optional Error File (OEF), Exhibit MSIS.215, Data Element Catalogue Numbers 308 and 309: The OEF is a fixed length, sequential access file of errors created during MSIS processing used for correcting the errors using text editing facilities.

e. Standard Error File (SEF), Exhibit MSIS.207, Data Element Catalogue Numbers 298 through 300: The SEF is a fixed length, sequential access file of errors created during processing in MSIS.

f. Standard History File (SHF), Exhibit MSIS.202 Data Element Catalogue Numbers 301 through 307:

The SHF is a fixed length, sequential access file of changes made to the Violations File (VIF), the Enforcement Actions File (EAF), the Variances and Exemptions File (VEF), and the Operator and Mailing File (OMF).

6. Variances and Exemptions Subsystem (VAEX)

   a. Variances and Exemptions File (VEF), Exhibit VAEX.212, Data Element Catalogue Numbers 455 through 477: The VEF is a variable length, sequential access file of the variances and exemptions granted by the state to public water systems.

7. Enforcement Actions Subsystem (ENAC)

   a. Enforcement Actions File (EAF), Exhibit ENAC.202, Data Element Catalogue Numbers 430 through 454: The EAF is a variable length, sequential access file of enforcement actions being monitored by the state.

8. Operator and Mailing Subsystem (OPER)

   a. Operator and Mailing File (OMF), Exhibit OPER.200, Data Element Catalogue Numbers 478 through 491: The OMF is a variable length, sequential access file of mailing information and records of certified operators.

(Sanitary Survey Subsystem (SRVY) does not create any permanent files.)

III. Subsystem Descriptions

A. Public Water System Inventory Subsystem (PWSI)

1. General Description

The Public Water System Inventory Subsystem (PWSI) is central to and a mandatory subsystem of the Model State Information System (MSIS). This subsystem maintains descriptive data about Public Water Systems (PWS's) on a Public Water File (PWF). This file is also used by other subsystems. The principal function of the PWSI Subsystem is to create and maintain this file and to display its contents upon request.

The PWF is used in the following subsystems:

- Water Quality Compliance Subsystem (WAQC) uses the PWF to identify state defined regulation criteria for each specific PWS.

- Federal Reporting Subsystem (FEDR) uses the PWF to report on the individual PWS's which were modified in a specific reporting period.

- Sanitary Survey Subsystem (SRVY) uses the PWF to selectively weigh and list PWS's for survey purposes according to specific criteria.

In addition, some basic descriptive data is maintained in a direct access file, the Public Water Table (PWT), that is used as a verification aid and as a source of Public Water File data by the following subsystems: Enforcement Actions Subsystem, Variances and Exemptions Subsystem, and Operator and Mailing Subsystem. This table is built from the PWF.

3. PWSI Subsystem Overview

The overall design of the PWSI includes the following functions:

- conversion of the PWF from the National Inventory File
- data entry and updating
- selection of data for reporting from the Public Water File and Public History File
- condensed reporting
- state discretionary data reporting
- Public Water System production data reporting
- comprehensive reporting
- history file maintenance, purge and reporting
- initial creation of the PWF from the national PWS Inventory File
- creation of the PWT

The main features of the PWSI Subsystem are

- Inputs do not depend on automation of other optional subsystems
- A sequential file and a direct-access table
- Variable length record for each PWS dependant on the number of water sources
- Flexible reporting modules that allow the user to specify selection criteria and sort sequence, but within predetermined print formats
- Suitable for annual reporting to EPA

Inputs to the subsystem consist of source documents that are transcribed on special input forms and then keypunched. The regular process is to read the input transactions and edit and verify all verifiable data. Transactions without errors are used to update the PWF, and those in error appear on an error list produced to facilitate correction of errors. Periodically and upon request, the PWF can be used to list an inventory of Public Water Systems and other information for use by state officials.

The inputs to PWSI Subsystem emanate from such sources as:

- EPA National PWS Inventory File (an inital conversion process)
- Sanitary surveys scheduled or performed
- Permits for new PWS's
- Updates received from PWS operators
- Updates received from VAEX, if subsystem is used
- Updates received from WAQC

Except for data from the EPA National PWS Inventory File, all inputs must be transcribed on a single input form that may be used for all these transactions (See Exhibit PWSI.400-401).

Exhibit PWSI.400-401 contains the format for PWS status and entry. This form serves two purposes:

- As an input form for the creation of a new PWS record
- As a turnaround document on which a PWS status is printed and which can be used to make changes and corrections to the record.

B. Regulations Subsystem (REGS)

1. General Description

The Regulations Subsystem (REGS) is a mandatory subsystem whose purpose is to create the Regulations File (RGF). The RGF is a file of records containing the Federal and/or state regulations for contaminants monitored in drinking water. The RGF serves as a basis for determining whether water samples taken from a PWS distribution system are in compliance with chemical, radiological, bacteriological or turbidity State or Federal Regulations. Each record on the RGF pertains specifically to information necessary to define a State or Federal Regulation for one contaminant. In addition, Federal and State Regulation tables such as the fluoride temperature dependent maximum contaminant levels are included in the RGF.

Drinking water quality is determined by comparing the results of laboratory analysis with the requirements of the National Interim Primary Drinking Water Regulations as contained on the RGF. These regulations specify the number of samples required, analysis methods allowed, and contaminant levels permitted. In some instances Federal standards are modifiable by the States (for example, as in 141.27, using alternative analytical techniques). A State may also choose to enforce its own, more stringent standards, in which case, a Public Water System (PWS) may be in violation of the state's standards, but not of the federal standards.

The RGF is used by the Water Quality Compliance Subsystem (WAQC) for determining Maximum Contaminant Level (MCL) and Sampling Violations and for scheduling samples and subsequent analysis for a given PWS.

3. REGS Subsystem Overview

The Regulations Subsystem consists of only two modules (REGS010 and REGS020) whose functions are to accept input transactions to create the Regulations File (RGF) and list its contents.

The fundamental structure of the RGF follows the National Interim Primary Drinking Water Regulations. If a State defines its regulations differently, the file formats may not fit the structure of the State regulation and a special interface must be developed for that State. States may, however, add contaminants to the file so long as the basic structure of the record is not violated.

The input consists of cards keypunched from the Regulations Subsystem input forms (Exhibits REGS.101 to 108). The output comprises the Regulations Tables and Reports (Exhibit REGS.301 - 308). The process consists of reading and editing all input transactions, creating a new RGF and listing its contents.

Since the regulations are expected to be fairly static once established, the system does not provide individual record update capability. Each time a regulation is changed, data from the new set of keypunched cards entirely rebuilds the RGF. However, states that have access to sophisticated computerized text editors may wish to maintain the RGF through such existing procedures.

C. Water Quality Compliance Subsystem (WAQC)

1. General Description

The Water Quality Compliance Subsystem (WAQC) is a mandatory subsystem which is designed to monitor the quality of the drinking water supplied to the public. Two levels of PWS compliance with the Safe Drinking Water Act may be defined. The first, or primary level of compliance is achieved by using those treatment, storage, and distribution methods needed to supply safe drinking water. A secondary compliance level is achieved by monitoring the quality of the drinking water being supplied to the public. This is a more indirect level and, therefore, less desirable method of detecting problems. Primary compliance actions are designed to prevent problems before they arise; secondary compliance activities are designed to identify problems and correct them after they have arisen.

Primary compliance can be controlled by a state in two ways; by a permit program for new PWS or by periodic sanitary surveys. A permit program is essentially a sanitary engineering task. The PWSI Subsystem will be used to maintain most data elements related to facilities. The Sanitary Survey Subsystem is used to schedule inspections of PWS facilities and thus provides a second way of controlling basic compliance.

Secondary compliance is accomplished by monitoring the sampling and analysis of finished water. The WAQC is designed to provide the means for this monitoring process.

There are eight requirements in the National Interim Primary Drinking Water Regulations that a PWS could violate:

(1) Maximum Contaminant Level (MCL).

(2) Sampling requirements: number, frequency, and methodology;

(3) Check sampling;

(4) State notification;

(5) Public notification;

(6) Treatment techniques;

(7) Violation of compliance schedule under a variance or exemption;

(8) Record Keeping.

The main purpose of the WAQC is to identify violations of the first three of these regulatory requirements. In this way, the Water Quality Compliance Subsystem compliments the PWSI Subsystem and the Sanitary Survey (SRVY) Subsystem by providing data management for tracing non-compliance with the Safe Drinking Water Act.

Secondary compliance can be further classified as compliance with the National Interim Primary Drinking Water Regulations or compliance with the state's own standards. There is a need to identify both, and also to indicate if non-compliance is temporarily overruled by variances or exemptions. The WAQC Subsystem responds to this need by using the Regulations File (RGF) and the Public Water File (PWF).

3. WAQC Subsystem Overview

The WAQC contains programs to carry out the following functions:

- Data Entry and Updating
- Selection and Sorting
- Reporting
- Purging
- Summarizing
- Violation Identification
- Sample Scheduling

The main features of the Water Quality Compliance Subsystem are:

- Batch, sequential processing;
- Interaction with the other MSIS Subsystem;
- Flexible selection and reporting modules that allow the user to specify record selection and sort sequence, but within predetermined print formats;
- Identification of violations of sampling requirements and contaminanct levels.

Analysis result input transactions are entered via sample data input forms for bacteriological, turbidity, chemical, and radiological samples. Input transactions may also be used for creating, deleting, or updating files (Periodic Sample File, Sample Analysis File, Violations File, Laboratory Table)

The three basic transactions in the sample data, file updates, and file deletions -- are discussed below:

a. Sample Data

The system is designed to accept three types of samples described below -- bacteriological, turbidity, and chemical and radiological samples.

1. Bacteriological Samples

Bacteriological samples may be reported by each PWS on a monthly summary form (Exhibit WAQC.108 and 402) or as a list of samples (Exhibit WAQC.107 and 401). The state may use the Bacteriological Reporting Requirements Flag on the inventory record to indicate the reporting mode for each PWS. If the flag is not set, it is assumed that the PWS is reporting on a list.

2. Turbidity Samples

A PWS may report turbidity samples on a summary form (Exhibit WAQC.108 and 407) or a list of individual samples (Exhibit WAQC.107 and 405). The state may use the Turbidity Reporting Requirements Flag on the inventory record to indicate the reporting mode for each PWS. If the flag is not set, it is assumed that the PWS is reporting on a list.

3. Chemical and Radiological Samples

Results of samples for chemical and radiological analysis must be reported individually (Exhibits (WAQC.106, 400). This form contains only the contaminants included in the National Interim Primary Drinking Water Regulations; states may add more contaminants to its individual forms if desired.

b. File Updates

Violations which are not automatically identified by the Water Quality Compliance Subsystem must be reported using the Violation Reporting Form for additions or updates to the Violations file.

c. Deletion

The Sample Analysis File (SAF) and Violations File (VIF) use code 99 for deletions. The Periodic Sample File (PSF) is an exception; it uses code 01 for deletion. This exception was permitted because the PSF does not allow updating. The only way an update can be accomplished is to first delete (code 01) and, second, add a corrected version.

All analysis result input transactions are edited and posted to the Periodic Sample File (PSF) which is used to collect and store data during the compliance cycle. Every reporting period, some of the data from the PSF will be summarized and posted to the Sample Analysis File (SAF).

The PWF, VEF and the Violations File (VIF) are matched to create a Deviations File and modified Public Water File (PWF). These two files constitute most of the annual reporting requirements.

D. Federal Reporting Subsystem (FEDR)

1. General Description

The Federal Reporting Subsystem (FEDR) is a mandatory subsystem which produces two of the four files needed to meet requirements as specified in Section 142.15 of the Interim Primary Drinking Water Regulations that must be sent to EPA by states who assume primary enforcement responsibility. These include:

- Additions to the National Public Water System Inventory or any Public Water File record which was modified in the past year.
- All Federal violations of the primary drinking water regulations;
- All variances or exemptions being considered or granted by the state and the status of each of the variances and exemptions.

The purpose of the FEDR Subsystem is to retrieve data elements from the state's files, and if necessary, reformat them, and create two files for reporting to EPA. There are two modules FEDR010 and 020.

3. FEDR Subsystem Overview

The features of the subsystem are:

- Batch processing of the Public Water File, Variance and Exemption File, and the Violations File which are necessary for periodic reporting to EPA.
- Output is in the format required by EPA for reporting

One of the potential benefits from implementing the subsystem is that states need not perform any special action for the annual report to EPA. Execution of the Federal Reporting Subsystem will automatically produce a Public Water File of all new or modified Public Water Systems and a file of all Federal Violations and Variance and Exemptions, unless the Variances and Exemptions Subsystem is not implemented, in which case their reporting must be done manually. This will save states using the Model State Information System the expense of preparing special summaries or input forms for EPA. And EPA will enjoy the benefit of standard formatted input files and more timely, accurate, and formatted input to its own data management system.

The process in preparing files and reports to submit to EPA is composed of the following steps:

a. Update the Violations File (VIF) with all current Violations data (module WAQC120) and produce the Compliance Summary Report (module WAQC125), selecting only those records which violate the Federal Interim Primary Drinking Water Regulations.

b* Update the Variances and Exemptions File (VEF) with all current Variances and Exemptions data (module VAEX010) and produce the Variances and Exemptions Condensed Report (modules VAEX040, VAEX041).

c. Run the Federal Reporting jobstream which will:

    1. Build the modified Public Water File (PWF) (module FEDR010).

    2. Build the Deviations File (DVF) (module FEDR020).

d. Run the following jobs which will complete the Federal Reporting Process:

    1. Produce the Public Water System Condensed Report from the modified PWF (modules PWSI020,PWSI030).

    2* Copy the Enforcement Actions File (EAF).

    3* Produce the Enforcement Actions Case History Report (modules ENAC020, ENAC030).

The files that are required for reporting are then ready, together with reports of their contents. Copies of the reports which were produced in the above steps should be made available for public inspection as required by 142,15(d) of the regulations.

*Note: These steps are bypassed if the subsystem referred to is not installed.

E. Standard Processing Subsystem (MSIS)

1. General Description

The Standard Processing Subsystem (MSIS) is a mandatory utility subsystem. It provides all of the other subsystems except Federal Reporting (FEDR) and Sanitary Survey (SRYV) Subsystems, with edit criteria and error processing. It provides a history file for Enforcement Actions (ENAC), Operator and Mailing (OPER), Variances and Exemptions (VAEX), and Violations File (VIF) from Water Quality Compliance (WAQC).

3. MSIS Subsystem Overview

The major functions of the MSIS subsystem are:

- Code Value Table (CVT), Data Element Table (DET), and Error Message Table (EMT) Creation
- Error handling
- History maintenance, purge, and reporting
- History record selection and reporting

The main features of the subsystem are:

- Sequential files and tables
- Batch processing
- Flexible record selection and reporting modules

The Code Value Table (CVT), Data Element Table (DET), and Error Message Table (EMT) are created in module MSIS030 from input forms Exhibits MSIS.102, 103, 104.

The Standard Error File (SEF) is created by all subsystems except the Sanitary Survey Subsystem (SRVY) and Federal Reporting Subsystem (FEDR) and processed by the MSIS Subsystem.

The Standard History File (SHF) is created by the Water Quality Compliance Subsystem (WAQC), and the Variances and Exemptions Subsystem (VAEX), Enforcement Actions Subsystem (ENAC), and Operator and Mailing Subsystem (OPER) if used by the state or region, and is then processed by the MSIS Subsystem.

F. Variances and Exemptions Subsystem (VAEX)

1. General Description

The purpose of this optional subsystem is to provide the state or region with a method for collection, maintenance and processing of data related to the process of granting variances or exemptions from State or Federal Regulations. The variances and exemptions are granted by states who have primary enforcement responsibility. For States that have not qualified for primary enforcement responsibility, the EPA region is authorized to grant variances and exemptions.

Variances and exemptions may not be granted if to do so would result in an "unreasonable risk to health". EPA has indicated that this is to be interpreted to mean that no variances or exemptions from bacteriological Maximum Contaminant Levels (MCL's) should be permitted. Variances and exemptions, therefore, will probably be permitted only from the chemical contaminant levels.

Variances and exemptions both have essentially the same result. Both effectively exempt a Public Water System from one or more requirements of the regulations. The difference lies in the circumstances under which they may be granted and the length of time allowed for compliance.

a. Variances

1. A variance from a maximum contaminant limit may be granted if a PWS is unable to comply because it is unable to make its raw water source safe for technological reasons. For example, many water systems in the southern part of Virginia draw their water from sources containing a naturally high concentration of fluoride. These systems will probably have to find an alternative source of water either by building a new treatment plant at another location or purchasing their water from a safe supplier. Until they are able to locate an alternative source and build the necessary treatment facilities or locate a safe supplier, they will need a variance from the fluoride contaminant limit.

2. A variance from the required treatment technique may be granted if a PWS can demonstrate that the treatment is not required because of the high quality of its raw water. In this case, the raw water is naturally free from a particular type of contaminant or contains low enough levels that it is unnecessary to treat it for that particular type of contaminant.

The first type of variance will be terminated when the system comes into compliance with the standard. The second type may be terminated at any time upon a finding that the nature of the raw water sources has changed to the extent that treatment is required. In effect, both types of variances will be granted for indefinite time periods with no legislated termination date.

b. Exemptions

Exemptions may be granted to PWS's that are unable to comply for compelling reasons, mainly economic ones. In other words, an exemption is designed to solve the problem of systems that cannot afford to apply available treatment technology rather than the problem of systems that cannot make their water safe with even the best available treatment technology. Exemptions address an economic problem, variances, a technical problem. Unlike variances, moreover, exemptions cannot be granted for indefinite time periods. The act itself states that compliance must occur by certain dates.

Exemptions are clearly aimed at the economic problems of smaller systems. The states or regions can use exemptions to give smaller systems additional time to comply with the regulations, but the Act contains specific cutoff dates by which these systems must be in compliance regardless of the cost.

If a variance or exemption is granted, the state or EPA region must prescribe a schedule for compliance and interim control measures within one year of the date it is granted. The state or region must monitor actual progress against this schedule in the same way that it has to monitor compliance with the main body of drinking water regulations.

3. VAEX Subsystem Overview

The VAEX subsystem must maintain variances and exemption information for three purposes. First, this type of information is required by the Federal Reporting Subsystem (FEDR) for reporting to EPA. Second, information is required for monitoring progress against compliance schedules specified in particular variances and exemptions for particular Public Water Systems. Last, any variance or exemption data needed for determining compliance will be generated by this subsystem and transmitted to the Public Water File.

The major functions of VAEX are:

- Data Entry and Updating
- Selection and Reporting
- Providing data to the Public Water System Inventory Subsystem.

The main features of the VAEX subsystem are:

- Sequential, variable length file;
- Batch processing;
- Flexibility in reporting with respect to selection, sorting, summarizing;
- Subsystem is optional and can be used if needed.

The source of transactions to create and maintain the Variances and Exemptions File (VEF) is the administrative unit responsible for the granting and monitoring of variances and exemptions.

All variances and exemptions on the VEF are identified by a sequential identification number. Accordingly, transactions refer to a VEF record by that number in positions 1 to 5 of the record. There are four types of transactions: addition of a new VEF record, milestone creations, changes to data elements in an existing record, and deletion of an existing record. All transactions are identified by a two-digit transaction code in positions 6 to 7 of the record. The transaction key, positions 1-7, is a combination of VAEX-ID and transaction code. Reference input forms layout in Exhibit VAEX.100, 101, 107.

G. Enforcement Actions Subsystem (ENAC)

1. General Description

The purpose of this optional subsystem is to provide the state or region with a method for collection, maintenance, and processing of data related to actions performed in connection with enforcing the state's own regulations (or the Federal Regulations) under the Safe Drinking Water Act. The data can then be used for evaluating the effectiveness of different types of enforcement actions. Reporting to EPA of enforcement actions, as required by section 142.15 of the regulations, can also be done automatically using the subsystem by submitting to EPA the reports of the entire Enforcement Actions File (EAF).

3. ENAC Subsystem Overview

The major functions of ENAC are:

- Data entry and updating
- Selection and reporting

The subsystem has the following features:

- Flexibility in preparing reports with respect to selection criteria and sorting;
- Subsystem is optional within MSIS;
- Batch processing using sequential files.

The source of transactions to create and maintain records in the Enforcement Actions File (EAF) is the administrative unit responsible for enforcing the drinking water regulations by formal actions.

A five-digit sequential number is used to identify an Enforcement Action record. This number in positions 1 to 5 of a transaction and transaction code in positions 6 and 7 constitute the transaction key.

H. Sanitary Survey Subsystem (SRVY)

1. General Description

The Sanitary Survey Subsystem (SRVY) is an optional subsystem designed to satisfy Section 142.10 (B)(2) of the Drinking Water Standards Implementation Regulations which requires states that assume enforcement responsibility to have "A systematic program for conducting sanitary survey compliance..."

A survey of 24 states shows that many states do not have enough manpower to survey as they would like. The addition of non-community Public Water Systems (PWS's) to those already under regulation, will increase the need for a systematic method of scheduling sanitary surveys. The Sanitary Survey Subsystem is designed to provide this systematic method.

The method is based on assigning different weight to five parameters: PWS type size of population served, the type of source water and Public Water System has, compliance history, and period elapsed since last survey. State officials can change the relative weights until a satisfactory formula is reached.

3. System Overview

The major functions of SRVY are:

- Scheduling
- Reporting

The features of the subsystem are:

- Simple, batch processing;
- Generation of Public Water File form designed as a turnaround document for computer input processing;
- Interaction with the PWSI Subsystem.

SRVY uses the Public Water File (PWF) and Violations File (VIF) to identify systems who are in violation and those who fit the prescribed conditions for selection.

I. Operator and Mailing Subsystem (OPER)

1. General Description

The Operator and Mailing Subsystem (OPER) is an optional subsystem designed for two purposes: first, to provide management with data concerning certified operators, and second, to provide the state with the capability to manage a mailing distribution list for mailing material to local governments, cities, consulting engineers, etc. Since the mailing list and operator data requirements are similar, these two functions are combined in a single subsystem.

3. OPER Subsystem Overview

The major functions of OPER are:

- Data Entry and Update
- Selection and Reporting
- Label Printing

The subsystem features:

- Off-line batch processing
- Sequential processing of a variable length
- Flexibility in reporting or printing labels with respect to selection and sorting.

Transactions to maintain the Operator and Mailing File (OMF) are of three types: add a new record, change data elements in an existing record, and deletion of a record. Records are identified by a five-digit sequential number and an addressee type code.

Addressee type '0' is reserved for operators. Other addressee types are left to be defined by each state according to its needs.

Because an operator record contains more information than other addressee type records, there are two different input forms for the two types (see Exhibits OPER.107 and 108). The difference between the two is that transaction '03' applies only to operator records.

Input Forms

Subsystem	Processing Options															
	PROC. Prog.	No.	SORT Prog.	No.	SEL1 Prog.	No.	SEL2 Prog.	No.	Table Creation Prog.	No.	Record Creation Prog.	No.	Water Quality Prog.	No.	Scheduling Prog.	No.
PSWI	010	111	030 - 080	100	020 & 080	107	020 & 080	108			010	114				
	020 - 050	113														
	060	110					RESTART									
	070	106					125									
	080	101														
	090	103														
	120 - 130	101														
WAQC	010 & 020	103	011	104	100 & 125	116	100 & 125	117	210	101	120	119	010	106	130	124
	011 & 125	111	040 - 113	113						102		120		107		
	025	121												108		
	040	112												105		
	100	115										020		110		
	120	118														
	130	114														
	210	100														
	220	113														
REGS	010	199							010	101						
	020	109								102						
										103						
										104						
										105						
										106						
										107						
										108						
VAEX	010	102	040	103	040	105	040	106			010	100				
												101				
												107				
SRVY	010	100	010	101												
ENAC	010	100	020	106	020	107	020	108			010	101				
	020	105										102				
												103				
												104				
OPER	010	101	020	103	020	104	020	105			010	100				
	020	102														
MSIS	030 & 040	101	040	108	040	106	040	107	030	102						
	050	100								103						
										104						
FEDR	010	100														
TOTALS	32	26	22	7	8	6	8	6	3	13	5	11	2	5	1	1

VARIES 1 of 1
10/28/76

This report is produced by any module that needs an Update Statistics Report.

SouthWestern Ohio Regional Computer Center

EXHIBIT MSIS.300

```
XXXXXXX ①                            MODEL STATE INFORMATION SYSTEM
                                  X--------------------------------X ②
DATE XX/XX/XX                        STANDARD UPDATE STATISTICS REPORT                              PAGE ZZZZ9

                                                                                   RELATIVE TO TE
                                                                         TOTAL     ORIGINAL FILE

                 1. NUMBER OF RECORDS ORIGINALLY ON THE FILE          ZZZ,ZZZ,ZZ9
                 2. NUMBER OF ACCEPTABLE DATA ENTRY TRANSACTIONS      ZZZ,ZZZ,ZZ9
                 3. NUMBER OF STANDARD ERROR RECORDS CREATED          ZZZ,ZZZ,ZZ9
                 4. NUMBER OF RECORDS MODIFIED ON THE FILE            ZZZ,ZZZ,ZZ9       ZZZ9 %
                 5. NUMBER OF NEW RECORDS ADDED TO THE FILE           ZZZ,ZZZ,ZZ9       ZZZ9 %
                 6. NUMBER OF RECORDS DELETED FROM THE FILE           ZZZ,ZZZ,ZZ9       ZZZ9 %
                 7.  NUMBER OF RECORDS NOW ON THE FILE                ZZZ,ZZZ,ZZ9       ZZZ9 %
```

① PROGRAM NAME

② SUBSYSTEM NAME

STATISTICAL REPORT

```
            REGS020                      1 of 1
                                         9/23/76
  RGP Report Module
              SouthWestern Ohio Regional Computer Center
EXHIBIT REGS.302


  REGS020                            MODEL STATI INFORMATION SYSTEM
                                        REGULATIONS SUBSYSTEM

  DATE XX/XX/XX                  REGULATIONS REPOIT - TURBIDITY CONTAMINANT                 PAGE ZZZZ9

     CONTAMINANT ID               REGULATION/LEVEL                   CONTAMINANT NAME

       0100                             XX                             TURBIDITY

         MCL FOR                        MCL FOR                          NUMBER OF
      MONTHLY AVERAGE             CONSECUTIVE SAMPLES               CONSECUTIVE SAMPLES

           Z9                             Z9                                Z9

        EFFECTIVE                       APPLY TO                      INCLUDE REPEAT
          DATE                         ALL SOUICES                  SAMPLES IN AVERAGE

        XX/XX/XX                           X                                X

       ______ FREQUENCY  OF  MONITORING ____________                MINIMUM RESAMPLING PERIOD
                                                                       IF MCL EXCEEDED
       COMMUNITY PWS:  ZZ9   NON-COMMUNITY PWS:  ZZ9
                                                                            Z9
```

INPUT REPORT

```
             MSI 10                              1 0. 1
                                                 11/ 1:/
ST .DA. I ERROR PROCES NG MODULE
            SOUTHWESTERN OHIO REGIONAL COMPUTER CENTER
EXHIBIT MSIS.313


                                                        MODEL STATE INFORMATION SYSTEM
MSIS010                                                  STANDARD PROCESSING SUBSYSTEM

DATE XX/XX/XX                                               DATA ENTRY ERROR REPORT
                                               FOR SUBSYSTEM:  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  ①                     PAGE ZZZZ9

ERROR
NUMBER 2345678901234567890123456789012345678901234567890123456789012345678901234567890        DATA
                                                                                          ELEMENT COLUMNS       EXPLANATIONS
 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXX XX-XX XXXXXXXXXXXXXXXXXXXXXXXXXXXX  ②
```

① X'S WILL BE REPLACED BY ONE OF THE FOLLOWING:

A. PUBLIC WATER SYSTEM INVENTORY
B. WATER QUALITY COMPLIANCE
C. REGULATIONS
D. VARIANCES AND EXEMPTIONS
E. ENFORCEMENT ACTIONS
F. OPERATOR AND MAILING
G. STANDARD PROCESSING

② SEE ATTACHED SHEETS FOR ERROR DESCRIPTIONS

ERROR REPORT

```
                  PWS1050                         1 OF 1
                                                  11/18/76
  STATE DISCRETIONARY DATA REPORT MODULE
              SOUTHWESTERN OHIO REGIONAL COMPUTER CENTER
EXHIBIT PWS1.301


                                                    MODEL STATE INFORMATION SYSTEM
  PWS1050                                       PUBLIC WATER SYSTEM INVENTORY SUBSYSTEM

  DATE XX/XX/XX                             PUBLIC WATER SYSTEMS - STATE DISCRETIONARY DATA                            PAGE 22229

  REGN DIST   ID               NAME      ------------------------B A C T E R I O L O G I C A L------------------    ---TURBIDITY---
                                                                                  MIN NO  NCOM  MCL HALT   %
   XX   XX  XXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXX  BACTI MONTHLY NO OF   SEASON   DAILY  SAMPLE  CHECK  CHLORINE       TURBIDITY
                                                    FLG  MONITOR SAMPLES START END CHECKS FREQ   SAMPLE  SAMPLES     FLAG    UNITS

                                                     X      X     XXX   XX/XX XX/XX X     XXX     X       XX          X      X.X

  ----------------CHEMICALS----------------       ---------------------------------RADIOACTIVE-------------------------------------
       FOLLOW
   UP MONITOR                   INORGANIC
  CONTAMIN SAMPLE   ORGANIC      AIR  NITRATE     RADIOACTIVE  BETA FREQ  NUCLEAR   MONITOR      MONITOR    NUM SAMPLES  GROUND WATER
    ID      FREQ  BEGIN END   TEMP       FREQ     FLG MONITOR     MONTHS     FAC  GROSS ALPHA  RADIUM MTHS    PER  YR      MONITOR

    XXXX     XXX  XX/XX XX/XX XX.X    XXXX         X     X       XX     X  X       XX           XX            X           X
    XXXX     XXX
    XXXX     XXX
    XXXX     XXX

  LAB DATA:       ID        CAPTIVE      TYPE
                                                                                  FACILITY          CONTAMINANT
                  XXXXX        X           X                                    CONTAMIN ID          FREQUENCY
                  XXXXX        X           X
                  XXXXX        X           X
                  XXXXX        X           X                                       XXXX                XX
                  XXXXX        X           X                                       XXXX                XX
                                                                                   XXXX                XX
  VARIANCE OR CONTAMINANT  MODIFIED  ALT MONITOR                                   XXXX                XX
   EXEMPTION:     ID         MCL          FREQ                                     XXXX                XX
                                                                                   XXXX                XX
                  XXXXX     XXXXXX       XXX                                       XXXX                XX
                  XXXXX     XXXXXX       XXX                                       XXXX                XX
                  XXXXX     XXXXXX       XXX                                       XXXX                XX
                  XXXXX     XXXXXX       XXX                                       XXXX                XX
```

INFORMATIONAL REPORT

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MSIS030                                MODEL STATE INFORMATION SYSTEM
                                       STANDARD PROCESSING SUBSYSTEM
DATE 05/11/77                               ERROR MESSAGE TABLE                                      PAGE     1

                   FILE ID              ERROR CODE                    ERROR MESSAGE

                     MS                    001                 REJECT-INVALID RECORD-ID
                     MS                    002                 REJECT-RECORD ALREADY EXISTS
                     MS                    003                 REJECT-NO MATCHING RECORD-ID
                     MS                    004                 REJECT-RECORD IS INCOMPLETE
                     MS                    005                 REJECT-CONTAM ID INVALID
                     MS                    006                 REJECT-STATE VALUE TOO LOW
                     MS                    007                 REJECT-STATE VALUE TOO HIGH
                     MS                    008                 REJECT-FED. RECORD MISSING
                     MS                    009                 REJECT-REC. HAS INVALID DATA
                     MS                    010                 REJECT-NOT NUMERIC
                     MS                    011                 REJECT-VALUE UNACCEPTABLE
                     MS                    012                 REJECT-VALUE TOO HIGH
                     MS                    013                 REJECT-VALUE TOO LOW
                     MS                    014                 REJECT-NOT IN CODE TABLE
                     MS                    015                 REJECT-PWS ID INVALID
                     MS                    016                 REJECT-LAB NOT AUTHORIZED
                     MS                    017                 REJECT-INVALID TRANSACT CODE
                     MS                    018                 REJECT-REQUIRED DATA MISSING
                     MS                    019                 REJECT-NO MATCHING MILESTONE
                     MS                    020                 REJECT-INVALID DELETE CODE
                     MS                    021                 REJECT-INVALID CREATE CODE
                     MS                    022                 REJECT-TOO MANY VIOLATIONS
                     MS                    023                 REJECT-NO MATCHING VIOLATION
                     MS                    024                 REJECT-INVALID REQUEST CODE
                     MS                    025                 REJECT-TOO MANY MILESTONES
                     MS                    026                 REJECT-INVALID OCCURRENCE
                     MS                    027                 REJECT-METHOD NOT ON TABLE
                     MS                    028                 REJECT-DUPLICATE MILESTONE
                     MS                    029                 REJECT-ILLEGAL DELETION
                     MS                    030                 REJECT-ASSOC VALUE MISSING
                     MS                    031                 REJECT-TOO MANY CONTAMINANTS
                     MS                    032                 REJECT-NO MATCHING CONTAMNT
                     MS                    033                 REJECT-INVALID DATE
                     MS                    034                 REJECT-DUPLICATE LAB ID
                     MS                    101                 WARNING-CHECK ELEMENT VALUE
                     MS                    102                 WARNING-ELEMENT EXCEEDS MAX
                     MS                    103                 WARNING-ELEMENT BELOW MIN
                     MS                    104                 WARNING-NOT IN CODE TABLE
                     MS                    105                 WARNING-NOT IN DATA ELE TBL
                     MS                    106                 WARNING-DEFAULT VALUE USED
                     MS                    107                 WARNING-NOT NUMERIC
                     MS                    108                 WARNING-VALUE TOO LOW
                     MS                    401                 INVALID-NOT NUMERIC
                     MS                    402                 INVALID-NOT IN CODE TABLE
                     MS                    403                 INVALID-NOT A VALID DATE
                     MS                    404                 INVALID-ELEMENT EXCEEDS MAX
                     MS                    405                 INVALID-ELEMENT BELOW MIN
                     MS                    406                 INVALID-ELEMENT MISSING
                     MS                    407                 INVALID-VALUE UNACCEPTABLE
                     MS                    408                 INVALID-NOT ALPHABETIC
```

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MSI8030                                 MODEL STATE INFORMATION SYSTEM
                                        STANDARD PROCESSING SUBSYSTEM
DATE 05/11/77
                                           ERROR MESSAGE TABLE
                                                                                        PAGE     2
                FILE ID          ERROR CODE
                                                              ERROR MESSAGE
                  MB
                  MB                 409               INVALID=NOT ON PUB WATER TBL
                  MB                 410               INVALID=ASSOC VALUE MISSING
                  MB                 411               INVALID=CANNOT ACCESS LST
```

MBI8030

MODEL STATE INFORMATION SYSTEM
STANDARD PROCESSING SUBSYSTEM

DATE 05/11/77

CODE VALUE TABLE

PAGE 1

FILE ID	DATA ELEMENT CATALOGUE NO	DATA ELEMENT LENGTH	DATA ELEMENT VALUE	DATA ELEMENT DESCRIPTION
EA	435	1	A	MUNICIPAL AUTHORITY
EA	435	1	C	CONSERVATION ORGANIZATION
EA	435	1	F	FEDERAL GOVERNMENT
EA	435	1	G	GROUP ACTION
EA	435	1	I	INDUSTRIAL ORGANIZATION
EA	435	1	M	MUNICIPAL GOVERNMENT
EA	435	1	N	COUNTY GOVERNMENT
EA	435	1	O	OTHER ORGANIZATION
EA	435	1	P	PRIVATE CITIZEN
EA	435	1	S	STATE GOVERNMENT
EA	435	1	W	WATER SUPPLY OWNER
EA	435	1	0	OTHER ORGANIZATION
EA	435	1	1	INDUSTRIAL ORGANIZATION
EA	437	1	F	FEDERAL POLLUTION SOURCE
EA	437	1	I	INDUSTRIAL POLLUTION SOURCE
EA	437	1	M	MUNICIPAL POLLUTION SOURCE
EA	437	1	N	COUNTY POLLUTION SOURCE
EA	437	1	O	OTHER POLLUTION SOURCE
EA	437	1	P	PRIVATE CITIZEN
EA	437	1	S	STATE POLLUTION SOURCE
EA	437	1	W	WATER SUPPLY OWNER
EA	437	1	0	OTHER POLLUTION SOURCE
EA	437	1	1	INDUSTRIAL POLLUTION SOURCE
EA	449	1	A	PRELIMINARY MOTIONS FILED
EA	449	1	B	SUMMARY MOTION FILED
EA	449	1	C	ORDER,INJUNCTION,TRO FINAL
EA	449	1	D	JUDGEMENT
EA	449	1	E	PENALTY
EA	449	1	F	CONSENT AGREEMENT SIGNED
EA	449	1	G	POST TRIAL MOTIONS FILED
EA	449	1	H	NOTICE OF APPEAL
EA	449	1	I	CIVIL ACTION
EA	449	1	J	STAY PENDING APPEAL
EA	449	1	K	APPEAL PENDING
EA	449	1	L	APPEAL RESOLVED
EA	449	1	M	COMPLIANCE ACHIEVED
EA	449	1	N	COMPLAINT FILED
EA	449	1	O	OTHER
EA	449	1	Z	PENDING DELETION
EA	449	1	0	OTHER
EA	449	1	1	CIVIL ACTION
EA	449	1	2	COMPLAINT FILED
EA	449	1	3	BRIEFS FILED
EA	449	1	4	PRETRIAL HELD
EA	449	1	5	HEARING SCHEDULED
EA	449	1	6	HEARING HELD
EA	449	1	7	ORAL ARGUMENTS HEARD

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MSI8030                                       MODEL STATE INFORMATION SYSTEM
                                              STANDARD PROCESSING SUBSYSTEM
DATE 05/11/77                                        CODE VALUE TABLE                                       PAGE     2

                      DATA ELEMENT
          FILE ID     CATALOGUE NO       DATA ELEMENT LENGTH     DATA ELEMENT VALUE           DATA ELEMENT DESCRIPTION
            EA            449                    1                      8                 INJUCTION REQUESTED
            EA            449                    1                      9                 TRO REQUESTED
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MSI8030                                      Model State Information System
                                              STANDARD PROCESSING SUBSYSTEM
DATE 05/11/77
                                                    CODE VALUE TABLE
                                                                                                   PAGE     1

                   DATA ELEMENT
       FILE ID     CATALOGUE NO       DATA ELEMENT LENGTH     DATA ELEMENT VALUE          DATA ELEMENT DESCRIPTION

         LB            321                    1                     C                  COMMERCIAL
         LB            321                    1                     D                  DAIRY
         LB            321                    1                     F                  FEDERAL INSTALLATION
         LB            321                    1                     G                  FEDERAL OTHER
         LB            321                    1                     H                  HEALTH FACILITY
         LB            321                    1                     I                  INDIAN  RESERVATION
         LB            321                    1                     L                  LOCAL
         LB            321                    1                     O                  OTHER
         LB            321                    1                     P                  PRIVATE
         LB            321                    1                     S                  STATE
         LH            321                    1                     U                  UNIVERSITY
         LB            321                    1                     W                  PUBLIC WATER SUPPLY
         LB            321                    1                     0                  OTHER
         LB            321                    1                     1                  INDIAN  RESERVATION
         LB            820                    3                    001                 NEPHELOMETRIC
         LB            820                    3                    101                 ATOMIC ABSORPTION
         LB            820                    3                    103                 FLAMELESS ATOMIC ABSORPTION
         LB            820                    3                    105                 BRUCINE COLORIMETRIC
         LB            820                    3                    107                 ELECTRODE
         LB            820                    3                    109                 CADMIUM REDUCTION
         LB            820                    3                    111                 COLORIMETRIC,PRELIM DISTILL.
         LB            820                    3                    201                 ORGANOCHLORINE PESTICIDES
         LB            820                    3                    203                 CHLORINATED PHENOXYHERBICIDES
         LB            820                    3                    301                 DPN - CHLORINE RESIDUAL
         LB            820                    3                    303                 MEMBRANE FILTER
         LB            820                    3                    305                 FERMENTATION TUBE - 10 ML
         LB            820                    3                    307                 FERMENTATION TUBE - 100 ML
         LB            820                    3                    401                 GROSS ALPHA & BETA, METHOD 302
         LB            820                    3                    403                 STRONTIUM-89,90, METHOD 303
         LB            820                    3                    405                 TOTAL RADIUM, METHOD 304
         LB            820                    3                    407                 RADIUM-226, METHOD 305
         LB            820                    3                    409                 TRITIUM, METHOD 306
         LB            820                    3                    411                 CESIUM-134, ASTM D-2459
         LB            820                    3                    413                 URANIUM, ASTM D-2907
         LB            820                    3                    999                 OTHER
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                                        MODEL STATE INFORMATION SYSTEM
MSIS030                                 STANDARD PROCESSING SUBSYSTEM

DATE 05/11/77                                CODE VALUE TABLE                                    PAGE    1

                         DATA ELEMENT
          FILE ID       CATALOGUE NO      DATA ELEMENT LENGTH      DATA ELEMENT VALUE          DATA ELEMENT DESCRIPTION

            MS              001                    4                     0100                  TURBIDITY
            MS              001                    4                     1005                  ARSENIC
            MS              001                    4                     1010                  BARIUM
            MS              001                    4                     1015                  CADMIUM
            MS              001                    4                     1020                  CHROMIUM
            MS              001                    4                     1025                  FLUORIDE
            MS              001                    4                     1030                  LEAD
            MS              001                    4                     1035                  MERCURY
            MS              001                    4                     1040                  NITRATE (AS N)
            MS              001                    4                     1045                  SELENIUM
            MS              001                    4                     1050                  SILVER
            MS              001                    4                     1055                  ADDL CHEM 1
            MS              001                    4                     1060                  ADDL CHEM 2
            MS              001                    4                     2005                  ENDRIN
            MS              001                    4                     2010                  LINDANE
            MS              001                    4                     2015                  METHOXYCHLOR
            MS              001                    4                     2020                  TOXAPHENE
            MS              001                    4                     2035                  ADDL CHEM 3
            MS              001                    4                     2040                  ADDL CHEM 4
            MS              001                    4                     2105                  2,4 - D
            MS              001                    4                     2110                  2,4,5 - TP SILVEX
            MS              001                    4                     3000                  COLIFORM
            MS              001                    4                     4000                  GROSS ALPHA PARTICLE ACTIVITY
            MS              001                    4                     4010                  COMBINED RADIUM
            MS              001                    4                     4020                  RADIUM-226
            MS              001                    4                     4030                  RADIUM-228
            MS              001                    4                     4100                  GROSS BETA PARTICLE ACTIVITY
            MS              001                    4                     4102                  TRITIUM
            MS              001                    4                     4120                  23-VANADIUM-48
            MS              001                    4                     4136                  26-IRON-59
            MS              001                    4                     4142                  27-COBALT-60
            MS              001                    4                     4146                  28-NICKEL-63
            MS              001                    4                     4172                  38-STRONTIUM-89
            MS              001                    4                     4174                  38-STRONTIUM-90
            MS              001                    4                     4176                  39-YTTRIUM-90
            MS              001                    4                     4178                  39-YTTRIUM-91
            MS              001                    4                     4184                  40-ZIRCONIUM-95
            MS              001                    4                     4188                  41-NIOBIUM-95
            MS              001                    4                     4200                  43-TECHNETIUM-99
            MS              001                    4                     4206                  44-RUTHENIUM-103
            MS              001                    4                     4208                  44-RUTHENIUM-106
            MS              001                    4                     4220                  47-SILVER-110
            MS              001                    4                     4262                  53-IODINE-129
            MS              001                    4                     4264                  53-IODINE-131
            MS              001                    4                     4270                  55-CESIUM-134
            MS              001                    4                     4306                  63-EUROPIUM-154
            MS              002                    1                     O                     OTHER
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MSIS030                                    MODEL STATE INFORMATION SYSTEM
                                           STANDARD PROCESSING SUBSYSTEM
DATE 05/11/77                                     CODE VALUE TABLE                                            PAGE     2

                          DATA ELEMENT
              FILE ID     CATALOGUE NO      DATA ELEMENT LENGTH      DATA ELEMENT VALUE          DATA ELEMENT DESCRIPTION

                MS            082                    1                       R                   REACTOR FACILITY
                MS            082                    1                       W                   WASTE STORAGE/REPROCESSING
                MS            082                    1                       O                   OTHER
                MS            109                    2                       AK                  ALASKA
                MS            149                    2                       AL                  ALABAMA
                MS            149                    2                       AR                  ARKANSAS
                MS            149                    2                       AS                  AMERICAN SAMOA
                MS            149                    2                       AZ                  ARIZONA
                MS            149                    2                       CA                  CALIFORNIA
                MS            149                    2                       CO                  COLORADO
                MS            149                    2                       CT                  CONNECTICUT
                MS            149                    2                       DC                  DISTRICT OF COLUMBIA
                MS            149                    2                       DE                  DELAWARE
                MS            149                    2                       FL                  FLORIDA
                MS            149                    2                       GA                  GEORGIA
                MS            149                    2                       GU                  GUAM
                MS            149                    2                       HI                  HAWAII
                MS            149                    2                       IA                  IOWA
                MS            149                    2                       ID                  IDAHO
                MS            149                    2                       IL                  ILLINOIS
                MS            149                    2                       IN                  INDIANA
                MS            149                    2                       KS                  KANSAS
                MS            149                    2                       KY                  KENTUCKY
                MS            149                    2                       LA                  LOUISIANA
                MS            149                    2                       MA                  MASSACHUSETTS
                MS            149                    2                       MD                  MARYLAND
                MS            149                    2                       ME                  MAINE
                MS            149                    2                       MI                  MICHIGAN
                MS            149                    2                       MN                  MINNESOTA
                MS            149                    2                       MO                  MISSOURI
                MS            149                    2                       MS                  MISSISSIPPI
                MS            149                    2                       MT                  MONTANA
                MS            149                    2                       NC                  NORTH CAROLINA
                MS            149                    2                       ND                  NORTH DAKOTA
                MS            149                    2                       NE                  NEBRASKA
                MS            149                    2                       NH                  NEW HAMPSHIRE
                MS            149                    2                       NJ                  NEW JERSEY
                MS            149                    2                       NM                  NEW MEXICO
                MS            149                    2                       NV                  NEVADA
                MS            149                    2                       NY                  NEW YORK
                MS            149                    2                       OH                  OHIO
                MS            149                    2                       OK                  OKLAHOMA
                MS            149                    2                       OR                  OREGON
                MS            149                    2                       PA                  PENNSYLVANIA
                MS            149                    2                       PR                  PUERTO RICO
                MS            149                    2                       RI                  RHODE ISLAND
                MS            149                    2                       SC                  SOUTH CAROLINA
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MSIS030                                   MODEL STATE INFORMATION SYSTEM
                                          STANDARD PROCESSING SUBSYSTEM
DATE 05/11/77
                                                CODE VALUE TABLE                                          PAGE     3

                    DATA ELEMENT
         FILE ID    CATALOGUE NO     DATA ELEMENT LENGTH     DATA ELEMENT VALUE          DATA ELEMENT DESCRIPTION

           MS           149                  2                       SD                 SOUTH DAKOTA
           MS           149                  2                       TN                 TENNESSEE
           MS           149                  2                       TT                 TRUST TERRITORIES
           MS           149                  2                       TX                 TEXAS
           MS           149                  2                       UT                 UTAH
           MS           149                  2                       VA                 VIRGINIA
           MS           149                  2                       VI                 VIRGIN ISLANDS
           MS           149                  2                       VT                 VERMONT
           MS           149                  2                       WA                 WASHINGTON
           MS           149                  2                       WI                 WISCONSIN
           MS           149                  2                       WV                 WEST VIRGINIA '
           MS           149                  2                       WY                 WYOMING
           MS           149                  2                       01                 EPA REGION I - BOSTON
           MS           149                  2                       02                 EPA REGION II - NEW YORK
           MS           149                  2                       03                 EPA REGION III - PHILADELPHIA
           MS           149                  2                       04                 EPA REGION IV - ATLANTA
           MS           149                  2                       05                 EPA REGION V - CHICAGO
           MS           149                  2                       06                 EPA REGION VI - DALLAS
           MS           149                  2                       07                 EPA REGION VII - KANSAS CITY
           MS           149                  2                       08                 EPA REGION VIII - DENVER
           MS           149                  2                       09                 EPA REGION IX - SAN FRANCISCO
           MS           149                  2                       10                 EPA REGION X - SEATTLE
           MS           343                  2                       01                 SINGLE SAMPLE MCL
           MS           343                  2                       02                 AVERAGE MCL
           MS           343                  2                       03                 REGULAR SAMPLING
           MS           343                  2                       04                 CHECK (REPEAT) SAMPLING
           MS           343                  2                       05                 STATE NOTIFICATION
           MS           343                  2                       06                 PUBLIC NOTIFICATION
           MS           343                  2                       07                 TREATMENT TECHNIQUES
           MS           343                  2                       08                 V OR E COMPLIANCE SCHEDULE
           MS           343                  2                       09                 RECORD KEEPING
           MS           343                  2                       10                 OPERATIONS REPORT
           MS           454                  2                       01                 LETTER TO PWS FROM STATE WSP
           MS           454                  2                       04                 ADM.HEARING - PWS & STATE WSP
           MS           454                  2                       07                 OTHER STATE ADM.PROCEDURE
           MS           454                  2                       10                 INJUNCTION SOUGHT
           MS           454                  2                       13                 FINE LEVIED ON PWS
           MS           454                  2                       16                 OTHER CIVIL ACTION
           MS           454                  2                       19                 EXPLORE ALT. SOURCES OF WATER
           MS           454                  2                       22                 EXPLORE REGIONAL SYS. DEVELOP
           MS           454                  2                       25                 FINANCIAL AID OBTAINED
           MS           454                  2                       28                 TREATMENT SYSTEM DESIGNED
           MS           454                  2                       31                 TREATMENT SYSTEM APPROVED
           MS           454                  2                       34                 TREATMENT SYSTEM BUILT
           MS           454                  2                       37                 PERIODIC MONITORING REQ'D.
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                                          MODEL STATE INFORMATION SYSTEM
MSIS030                                   STANDARD PROCESSING SUBSYSTEM

DATE 05/11/77                                    CODE VALUE TABLE                                        PAGE     1

                        DATA ELEMENT
          FILE ID       CATALOGUE NO      DATA ELEMENT LENGTH     DATA ELEMENT VALUE          DATA ELEMENT DESCRIPTION

            OM              479                    1                      L                LABORATORY OWNER
            OM              479                    1                      O                OPERATOR
            OM              479                    1                      P                WATER PURVEYOR
            OM              479                    1                      S                SANITARY ENGINEER
            OM              479                    1                      W                WATER SUPPLY OWNER
            OM              479                    1                      X                OTHER
            OM              479                    1                      0                OPERATOR
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MSI8030                                    MODEL STATE INFORMATION SYSTEM
                                           STANDARD PROCESSING SUBSYSTEM
DATE 05/11/77                                     CODE VALUE TABLE                                       PAGE     1

                          DATA ELEMENT
          FILE ID        CATALOGUE NO     DATA ELEMENT LENGTH     DATA ELEMENT VALUE          DATA ELEMENT DESCRIPTION
            PM               159                   3                      001                   ADAMS
            PM               159                   3                      003                   ALEXANDER
            PM               159                   3                      005                   BOND
            PM               159                   3                      007                   BOONE
            PM               159                   3                      009                   BROWN
            PM               159                   3                      011                   BUREAU
            PM               159                   3                      013                   CALHOUN
            PM               159                   3                      015                   CARROLL
            PM               159                   3                      017                   CASS
            PM               159                   3                      019                   CHAMPAIGN
            PM               159                   3                      021                   CHRISTIAN
            PM               159                   3                      023                   CLARK
            PM               159                   3                      025                   CLAY
            PM               159                   3                      027                   CLINTON
            PM               159                   3                      029                   COLES
            PM               159                   3                      031                   COOK
            PM               159                   3                      033                   CRAWFORD
            PM               159                   3                      035                   CUMBERLAND
            PM               159                   3                      037                   DE KALB
            PM               159                   3                      039                   DE WITT
            PM               159                   3                      041                   DOUGLAS
            PM               159                   3                      043                   DE PAGE
            PM               159                   3                      045                   EDGAR
            PM               159                   3                      047                   EDWARDS
            PM               159                   3                      049                   EFFINGHAM
            PM               159                   3                      051                   FAYETTE
            PM               159                   3                      053                   FORD
            PM               159                   3                      055                   FRANKLIN
            PM               159                   3                      057                   FULTON
            PM               159                   3                      059                   GALLATIN
            PM               159                   3                      061                   GREENE
            PM               159                   3                      063                   GRUNDY
            PM               159                   3                      065                   HAMILTON
            PM               159                   3                      067                   HANCOCK
            PM               159                   3                      069                   HARDIN
            PM               159                   3                      071                   HENDERSON
            PM               159                   3                      073                   HENRY
            PM               159                   3                      075                   IROQUOIS
            PM               159                   3                      077                   JACKSON
            PM               159                   3                      079                   JASPER
            PM               159                   3                      081                   JEFFERSON
            PM               159                   3                      083                   JERSEY
            PM               159                   3                      085                   JO DAVIESS
            PM               159                   3                      087                   JOHNSON
            PM               159                   3                      089                   KANE
            PM               159                   3                      091                   KANKAKEE
            PM               159                   3                      093                   KENDALL
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MSIS030
DATE 05/11/77                               CODE VALUE TABLE                                              PAGE    2

                     DATA ELEMENT
       FILE ID       CATALOGUE NO     DATA ELEMENT LENGTH     DATA ELEMENT VALUE        DATA ELEMENT DESCRIPTION
         PW              159                   3                     095                  KNOX
         PW              159                   3                     097                  LAKE
         PW              159                   3                     099                  LA SALLE
         PW              159                   3                     101                  LAWRENCE
         PW              159                   3                     103                  LEE
         PW              159                   3                     105                  LIVINGSTON
         PW              159                   3                     107                  LOGAN
         PW              159                   3                     109                  MCDONOUGH
         PW              159                   3                     111                  MCHENRY
         PW              159                   3                     113                  MCLEAN
         PW              159                   3                     115                  MACON
         PW              159                   3                     117                  MACOUPIN
         PW              159                   3                     119                  MADISON
         PW              159                   3                     121                  MARION
         PW              159                   3                     123                  MARSHALL
         PW              159                   3                     125                  MASON
         PW              159                   3                     127                  MASSAC
         PW              159                   3                     129                  MENARD
         PW              159                   3                     131                  MERCER
         PW              159                   3                     133                  MONROE
         PW              159                   3                     135                  MONTGOMERY
         PW              159                   3                     137                  MORGAN
         PW              159                   3                     139                  MOULTRIE
         PW              159                   3                     141                  OGLE
         PW              159                   3                     143                  PEORIA
         PW              159                   3                     145                  PERRY
         PW              159                   3                     147                  PIATT
         PW              159                   3                     149                  PIKE
         PW              159                   3                     151                  POPE
         PW              159                   3                     153                  PULASKI
         PW              159                   3                     155                  PUTNAM
         PW              159                   3                     157                  RANDOLPH
         PW              159                   3                     159                  RICHLAND
         PW              159                   3                     161                  ROCK ISLAND
         PW              159                   3                     163                  ST CLAIR
         PW              159                   3                     165                  SALINE
         PW              159                   3                     167                  SANGAMON
         PW              159                   3                     169                  SCHUYLER
         PW              159                   3                     171                  SCOTT
         PW              159                   3                     173                  SHELBY
         PW              159                   3                     175                  STARK
         PW              159                   3                     177                  STEPHENSON
         PW              159                   3                     179                  TAZEWELL
         PW              159                   3                     181                  UNION
         PW              159                   3                     183                  VERMILLION
         PW              159                   3                     185                  WABASH
         PW              159                   3                     187                  WARREN
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                                          MODEL STATE INFORMATION SYSTEM
MSIS030                                   STANDARD PROCESSING SUBSYSTEM

DATE 05/11/77                                   CODE VALUE TABLE                                    PAGE    3

                          DATA ELEMENT
              FILE ID     CATALOGUE NO     DATA ELEMENT LENGTH     DATA ELEMENT VALUE          DATA ELEMENT DESCRIPTION

                PW            159                   3                     189                 WASHINGTON
                PW            159                   3                     191                 WAYNE
                PW            159                   3                     193                 WHITE
                PW            159                   3                     195                 WHITESIDE
                PW            159                   3                     197                 WILL
                PW            159                   3                     199                 WILLIAMSON
                PW            159                   3                     201                 WINNEBAGO
                PW            159                   3                     203                 WOODFORD
                PW            160                   3                     017                 CANADIAN INDIAN
                PW            160                   3                     018                 CAYUGA
                PW            160                   3                     019                 CAYUGA-SENECA
                PW            160                   3                     020                 CONFEDERATED TRIBES CHEHALIS
                PW            160                   3                     027                 CHICKASAW
                PW            160                   3                     032                 CHOCTAW
                PW            160                   3                     037                 COEUR D'ALENE
                PW            160                   3                     042                 CREE
                PW            160                   3                     043                 CREEK
                PW            160                   3                     044                 CROW
                PW            160                   3                     076                 MIAMI
                PW            160                   3                     078                 MISSOURI
                PW            160                   3                     079                 MISSOURI-OTOE
                PW            160                   3                     091                 OSAGE
                PW            160                   3                     093                 OTTAWA
                PW            160                   3                     097                 PAWNEE
                PW            160                   3                     103                 POTAWATOMIE
                PW            160                   3                     140                 SHAWNEE
                PW            160                   3                     142                 EASTERN SHAWNEE
                PW            160                   3                     171                 WINNEBAGO
                PW            196                   1                     A                   SYSTEM ABANDONED
                PW            196                   1                     D                   DUPLICATE PWS WITH ANOTHER ID
                PW            196                   1                     M                   SYSTEM MERGED/CONSOLIDATED
                PW            196                   1                     O                   OTHER
                PW            196                   1                     P                   SYSTEM PURGED FROM INVENTORY
                PW            196                   1                     R                   PWS REENTERED WITH NEW ID
                PW            196                   1                     S                   SYSTEM DISCONTINUED
                PW            196                   1                     0                   OTHER
                PW            200                   2                     01                  REGION 1  = ROCKFORD
                PW            200                   2                     02                  REGION 2  = AURORA
                PW            200                   2                     03                  REGION 3  = SPRINGFIELD
                PW            200                   2                     04                  REGION 4  = COLLINSVILLE
                PW            200                   2                     05                  REGION 5  = MARION
                PW            200                   2                     3A                  REGION 3A = CHAMPAIGN
                PW            201                   2                     01                  DISTRICT 1
                PW            201                   2                     02                  DISTRICT 2
                PW            201                   2                     03                  DISTRICT 3
                PW            201                   2                     04                  DISTRICT 4
                PW            201                   2                     05                  DISTRICT 5
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                                          MODEL STATE INFORMATION SYSTEM
MSI8030                                   STANDARD PROCESSING SUBSYSTEM

DATE 05/11/77                                    CODE VALUE TABLE                                        PAGE     4

                         DATA ELEMENT
          FILE ID        CATALOGUE NO      DATA ELEMENT LENGTH      DATA ELEMENT VALUE          DATA ELEMENT DESCRIPTION

            PW               201                   2                      06                 DISTRICT 6
            PW               237                   1                      A                  AUTHORITY/COMMISION/DISTRICT
            PW               237                   1                      C                  CITY
            PW               237                   1                      F                  FEDERAL
            PW               237                   1                      I                  INVESTOR
            PW               237                   1                      M                  MUNICIPALITY
            PW               237                   1                      N                  COUNTY
            PW               237                   1                      O                  OTHER
            PW               237                   1                      S                  STATE
            PW               237                   1                      U                  UNKNOWN
            PW               237                   1                      0                  OTHER
            PW               237                   1                      1                  INVESTOR
            PW               246                   1                      E                  EMERGENCY SOURCE
            PW               246                   1                      I                  INTERIM SOURCE
            PW               246                   1                      O                  OTHER
            PW               246                   1                      P                  PERMANENT SOURCE
            PW               246                   1                      R                  RESERVE SOURCE
            PW               246                   1                      S                  SEASONAL SOURCE
            PW               246                   1                      0                  OTHER
            PW               246                   1                      1                  INTERIM SOURCE
            PW               247                   4                      0515               SALT RIVER
            PW               247                   4                      0516               GREEN RIVER
            PW               247                   4                      0517               WABASH RIVER
            PW               247                   4                      0518               EAST FORK WHITE RIVER
            PW               247                   4                      0519               WEST FORK WHITE RIVER
            PW               247                   4                      0520               CUMBERLAND RIVER
            PW               247                   4                      0521               OHIO RIVER MAIN STEM
            PW               247                   4                      0803               MENOMINEE
            PW               247                   4                      0804               CEDAR
            PW               247                   4                      0805               FORD
            PW               247                   4                      0806               ESCANABA
            PW               247                   4                      0807               RAPID
            PW               247                   4                      0808               WHITEFISH
            PW               247                   4                      0809               STURGEON
            PW               247                   4                      0810               FISHDAM
            PW               247                   4                      0811               MANISTIQUE
            PW               247                   4                      0816               BOARDMAN
            PW               247                   4                      0818               BETSIE
            PW               247                   4                      0823               WHITE
            PW               247                   4                      0828               GRAND
            PW               248                   3                      001                0394531 0401228
            PW               248                   3                      003                0370009 0372033
            PW               248                   3                      005                0384401 0390156
            PW               248                   3                      007                0420925 0433011
            PW               248                   3                      009                0395405 0400626
            PW               248                   3                      011                0410052 0423527
            PW               248                   3                      013                0385133 0392412
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MSI8030                                       MODEL STATE INFORMATION SYSTEM
                                              STANDARD PROCESSING SUBSYSTEM
DATE 05/11/77                                       CODE VALUE TABLE                                          PAGE     5

                       DATA ELEMENT
         FILE ID       CATALOGUE NO      DATA ELEMENT LENGTH      DATA ELEMENT VALUE          DATA ELEMENT DESCRIPTION

           PW              248                    3                      015                   0815556 0421219
           PW              248                    3                      017                   0395204 0400725
           PW              248                    3                      019                   0395241 0402331
           PW              248                    3                      021                   0392100 0404943
           PW              248                    3                      023                   0391009 0392908
           PW              248                    3                      025                   0383543 0395453
           PW              248                    3                      027                   0382407 0394408
           PW              248                    3                      029                   0392226 0404056
           PW              248                    3                      031                   0412753 0420936
           PW              248                    3                      033                   0385107 0391039
           PW              248                    3                      035                   0391021 0392246
           PW              248                    3                      037                   0413748 0420935
           PW              248                    3                      039                   0406301 0401653
           PW              248                    3                      041                   0393446 0405246
           PW              248                    3                      043                   0413950 0425928
           PW              249                    3                      001                   0905435 0923014
           PW              249                    3                      003                   0891038 0903039
           PW              249                    3                      005                   0891539 0903814
           PW              249                    3                      007                   0884205 0895625
           PW              249                    3                      009                   0903038 0915443
           PW              249                    3                      011                   0890952 0905106
           PW              249                    3                      013                   0902704 0915610
           PW              249                    3                      015                   0894107 0901940
           PW              249                    3                      017                   0895919 0913507
           PW              249                    3                      019                   0875545 0882842
           PW              249                    3                      021                   0890143 0903229
           PW              249                    3                      023                   0873214 0880111
           PW              249                    3                      025                   0881503 0894218
           PW              249                    3                      027                   0890837 0904227
           PW              249                    3                      029                   0875809 0882836
           PW              249                    3                      031                   0873126 0881640
           PW              249                    3                      033                   0873121 0885721
           PW              249                    3                      035                   0880111 0882841
           PW              249                    3                      037                   0883453 0895640
           PW              249                    3                      039                   0883853 0890829
           PW              249                    3                      041                   0875625 0882836
           PW              249                    3                      043                   0875524 0881640
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                                   MODEL STATE INFORMATION SYSTEM
MSIS030                            STANDARD PROCESSING SUBSYSTEM

DATE 05/11/77                             CORE VALUE TABLE                                        PAGE     1

                      DATA ELEMENT
          FILE ID     CATALOGUE NO     DATA ELEMENT LENGTH     DATA ELEMENT VALUE        DATA ELEMENT DESCRIPTION

            RG            044                   1                      C                  COLOR
            RG            044                   1                      D                  TDS
            RG            044                   1                      F                  FOAMING
            RG            044                   1                      H                  HEALTH
            RG            044                   1                      I                  IRON
            RG            044                   1                      L                  CHLORIDE
            RG            044                   1                      M                  MANGANESE
            RG            044                   1                      O                  ODOR
            RG            044                   1                      P                  PH
            RG            044                   1                      S                  SULFATE
            RG            044                   1                      T                  TASTE
            RG            044                   1                      U                  COPPER
            RG            044                   1                      V                  CORROSIVITY
            RG            044                   1                      Y                  HYDROGEN SULFIDE
            RG            044                   1                      Z                  ZINC
            RG            044                   1                      0                  ODOR
            RG            044                   1                      1                  IRON
            RG            044                   1                      2                  ZINC
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MSI8030

MODEL STATE INFORMATION SYSTEM
STANDARD PROCESSING SUBSYSTEM

DATE 05/11/77

CODE VALUE TABLE

PAGE 1

FILE ID	DATA ELEMENT CATALOGUE NO	DATA ELEMENT LENGTH	DATA ELEMENT VALUE	DATA ELEMENT DESCRIPTION
VE	461	1	A	INTEREST IN V OR E EXPRESSED
VE	461	1	C	APPLICATION FOR V OR E REC'D
VE	461	1	E	STATE PROPOSES TO DENY V OR E
VE	461	1	G	STATE PROPOSES TO GRANT V OR E
VE	461	1	I	HEARING ON PROPOSAL SCHEDULED
VE	461	1	K	HEARING ON PROPOSAL HELD
VE	461	1	M	COMPLIANCE SCHEDULE PRESCRIBED
VE	461	1	O	HEARING ON SCHEDULE OFFERED
VE	461	1	Q	HEARING ON SCHEDULE HELD
VE	461	1	R	ADDITIONAL INFORMATION DESIRED
VE	461	1	S	V OR E GRANTED
VE	461	1	T	V OR E DENIED
VE	461	1	U	STATE SETS MONITORING REQ'M
VE	461	1	V	EPA SETS MONITORING REQ'M
VE	461	1	W	NOTIFICATION GIVEN TO PUBLIC
VE	461	1	X	OTHER
VE	461	1	Y	NOTIFICATION GIVEN TO EPA
VE	461	1	Z	PENDING DELETION
VE	461	1	0	HEARING ON SCHEDULE OFFERED
VE	461	1	1	HEARING ON PROPOSAL SCHEDULED
VE	465	3	020	AERATION
VE	465	3	040	PRECHLORINATION
VE	465	3	060	COAGULATION
VE	465	3	080	SEDIMENTATION
VE	465	3	100	FILTRATION
VE	465	3	120	CORROSION CONTROL
VE	465	3	140	SOFTENING
VE	465	3	160	TASTE AND ODOR CONTROL
VE	465	3	180	IRON REMOVAL
VE	465	3	200	AMMONIATION
VE	465	3	220	FLORIDE ADJUSTMENT
VE	465	3	240	DISINFECTION
VE	466	3	001	LIME COAGULATION
VE	466	3	003	PRECIPITATION
VE	466	3	005	SEQUESTRATION
VE	466	3	007	STRAINING
VE	466	3	009	SCREENING
VE	466	3	011	DESALINATION
VE	466	3	013	REVERSE OSMOSIS
VE	466	3	015	MANGANESE REMOVAL
VE	466	3	017	ACTIVATED CARBON (GRANULAR)
VE	466	3	019	ACTIVATED CARBON (POWDERED)
VE	466	3	021	FLUORIDATION
VE	466	3	023	FLUORIDE REMOVAL
VE	466	3	025	U.V. DISINFECTION
VE	466	3	027	OZONE DISINFECTION
VE	466	3	029	IODINE DISINFECTION

Model State Information System
Standard Processing Subsystem

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MSI8030
DATE 05/11/77                              CODE VALUE TABLE                                   PAGE    2

              DATA ELEMENT
    FILE ID   CATALOGUE NO     DATA ELEMENT LENGTH     DATA ELEMENT VALUE        DATA ELEMENT DESCRIPTION

      VE          466                  3                      031             CHLORINE DISINFECTION
      VE          466                  3                      033             CHLORINE DIOXIDE
      VE          466                  3                      035             BREAKPOINT CHLORINATION
      VE          466                  3                      037             POST-CHLORINATION
      VE          466                  3                      039             SUPER-CHLORINATION
      VE          466                  3                      041             CARBON ABSORPTION
      VE          466                  3                      043             ELECTRODIALYSIS
      VE          466                  3                      045             DISTILLATION
      VE          466                  3                      047             RE-CARBONATION
      VE          466                  3                      049             ION EXCHANGE
      VE          466                  3                      051             FLOCCULATION
      VE          466                  3                      053             PH ADJUSTMENT
      VE          466                  3                      055             CHEMICAL OXIDATION
      VE          466                  3                      057             ABSORBING AGENTS
      VE          466                  3                      998             OTHER
      VE          466                  3                      999             NO TREATMENT REQUIRED
      VE          469                  2                      01              CANNOT COMPLY AFTER TREATMENT
      VE          469                  2                      03              CANNOT AFFORD FACILITY CONST.
      VE          469                  2                      05              FUNDS PENDING
      VE          469                  2                      07              FACILITY CONST. PENDING
      VE          469                  2                      09              UNABLE TO AFFORD TREATMENT
      VE          469                  2                      11              TREATMENT UNNECESSARY
      VE          469                  2                      13              TREATMENT IMPRACTICAL
      VE          469                  2                      99              OTHER
      VE          476                  1                      2               DELETE MILESTONE
      VE          476                  1                      1               FACILITY CONSTRUCTION NOT COMP
      VE          476                  1                      3               NEW WATER SOURCE NOT FOUND
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                                              MODEL STATE INFORMATION SYSTEM
MSI8030                                       STANDARD PROCESSING SUBSYSTEM

DATE 05/11/77                                     DATA ELEMENT TABLE                                          PAGE    1

                              RECORD INFORMATION                                        NAME INFORMATION
                                        START POSITION              FIELD LENGTH
        FILE ID     CATALOGUE NO     TRANSACTION / FILE         TRANSACTION / FILE        MNEMONIC NAME              HISTORY CODE

          EA             430               01        0001             05       05          EA-CASE-ID                    Y
          EA             431               09        0006             12       12          EA-CASE-RE                    Y
          EA             432               21        0018             30       30          EA-CASENAM                    Y
          EA             433               51        0048             06       05          EA-ACT-DAT                    Y
          EA             434               08        0053             01       01          EA-CLOSE                      Y
          EA             435               08        0054             01       01          EA-PLNTYPE                    Y
          EA             436               09        0055             30       30          EA-PLNNAME                    Y
          EA             437               39        0085             01       01          EA-DEFTYPE                    Y
          EA             438               40        0086             30       30          EA-DEFNAME                    Y
          EA             439               08        0116             07       07          EA-ORDERNO                    Y
          EA             440               15        0123             06       05          EA-ORDATE                     Y
          EA             441               21        0128             07       07          EA-PERNO                      Y
          EA             442               28        0135             06       05          EA-PERDATE                    Y
          EA             443               58        0140             07       07          EA-PWS-ID                     Y
          EA             444               65        0147             02       02          EA-STATE                      Y
          EA             445               10        ****             06       05          EA-VIL-DAT                    Y
          EA             446               16        ****             08       08          EA-CON-ID                     Y
          EA             447               08        ****             02       02          EA-VIOL-TP                    Y
          EA             448               08        ****             30       30          EA-ABSTRAC                    Y
          EA             449               57        0559             01       01          EA-LEGALST                    Y
          EA             450               00        0560             00       05          EA-LST-UP                     Y
          EA             451               06        0565             00       02          EA-MISTONE                    Y
          EA             452               10        ****             06       05          EA-TAR-DT                     Y
          EA             453               16        ****             06       05          EA-ATT-DAT                    Y
          EA             454               08        ****             02       02          EA-MIL-CND                    Y
          EA             904               06        ****             02       02          EA-TRAN-CD                    N
          EA             907               08        ****             01       01          EA-CRDT-CD                    N
          EA             911               22        ****             01       01          EA-DEL-CD                     N
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                                   MODEL STATE INFORMATION SYSTEM
MSI8030                            STANDARD PROCESSING SUBSYSTEM

DATE 05/11/77                           DATA ELEMENT TABLE                                    PAGE    1

                        RECORD INFORMATION                              NAME INFORMATION
                             START POSITION          FIELD LENGTH
   FILE ID   CATALOGUE NO   TRANSACTION / FILE    TRANSACTION / FILE    MNEMONIC NAME            HISTORY CODE

     LB          319            01       0001         05       05        LB-ID                        N
     LB          320            06       0006         01       01        LB-CONTGRP                   N
     LB          321            07       0007         01       01        LB-ON-TYPE                   N
     LB          322            08       0008         30       30        LB-NAME                      N
     LB          323            38       0038         06       05        LB-EXP-DT                    N
     LB          324            00       0043         00       06        LB-REL-REC                   N
     LB          325            00       0049         00       02        LB-METHCNT                   N
     LB          820            07       ****         72       03        LB-METHOD                    N
     LB          914            79       ****         02       02        TRAN-CODE                    N
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                                  MODEL STATE INFORMATION SYSTEM
MSIB030                           STANDARD PROCESSING SUBSYSTEM

DATE 05/11/77                          DATA ELEMENT TABLE                                        PAGE    1

                      RECORD INFORMATION                                     NAME INFORMATION
                          START POSITION          FIELD LENGTH
FILE ID   CATALOGUE NO   TRANSACTION / FILE    TRANSACTION / FILE      MNEMONIC NAME          HISTORY CODE

  OM          478            01       0001         05       05         OM-ADB-ID                 Y
  OM          479            06       0006         01       01         OM-ADB-TYP                Y
  OM          480            09       0007         30       30         OM-ADS-NAM                Y
  OM          481            39       0037         30       30         OM-ADS-STR                Y
  OM          482            08       0067         30       30         OM-ADS-CTY                Y
  OM          483            38       0097         02       02         OM-ADS-STA                Y
  OM          484            40       0099         05       05         OM-ADS-ZIP                Y
  OM          485            45       0104         03       03         OM-AREA-CD                Y
  OM          486            48       0107         07       07         OM-PH-NUM                 Y
  OM          487            00       0114         00       05         OM-LST-UPD                Y
  OM          488            08       0119         07       07         OM-CER-NUM                Y
  OM          489            15       0126         07       07         OM-PNS-ID                 Y
  OM          490            22       ****         06       01         OM-OP-CLS                 Y
  OM          491            28       0139         06       05         OM-RNL-DT                 Y
  OM          903            06       ****         02       02         OM-TRAN-CD                N
  OM          908            08       ****         01       01         OM-CRDT-CD                N
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MSI8030                                        MODEL STATE INFORMATION SYSTEM
                                               STANDARD PROCESSING SUBSYSTEM
DATE 05/11/77
                                                   DATA ELEMENT TABLE
                                                                                                    PAGE    1

                                RECORD INFORMATION                                   NAME INFORMATION
                                    START POSITION              FIELD LENGTH
        FILE ID   CATALOGUE NO   TRANSACTION / FILE         TRANSACTION / FILE       MNEMONIC NAME              HISTORY CODE
          PH          310            00       0001              00       07          PH-PHS-ID                       Y
          PH          311            00       0008              00       03          PH-CAT-NO                       Y
          PH          312            00       0011              00       05          PH-CUR-UP                       Y
          PH          313            00       0016              00       30          PH-PH-NAME                      Y
          PH          314            00       0046              00       02          PH-S-REGN                       Y
          PH          315            00       0048              00       02          PH-S-DIST                       Y
          PH          316            00       0050              00       05          PH-LST-UP                       Y
          PH          317            00       0055              00       30          PH-OLD-VAL                      Y
          PH          318            00       0085              00       30          PH-NEW-VAL                      Y
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MSIS030

DATE 05/11/77

MODEL STATE INFORMATION SYSTEM
STANDARD PROCESSING SUBSYSTEM

DATA ELEMENT TABLE

		RECORD INFORMATION				NAME INFORMATION	
		START POSITION		FIELD LENGTH			
FILE ID	CATALOGUE NO	TRANSACTION	/ FILE	TRANSACTION	/ FILE	MNEMONIC NAME	HISTORY CODE
PS	399	01	0001	07	07	PS-PHS-ID	N
PS	400	10	0010	04	04	PS-CONTD	N
PS	401	20	0014	03	03	PS-SAMPLID	N
PS	402	37	0017	01	01	PS-SAMPLTP	N
PS	403	31	0018	06	05	PS-SAMPLDT	N
PS	404	38	0023	04	04	PS-SAMPLTM	N
PS	405	17	0027	10	10	PS-SAMPLKY	N
PS	406	00	0037	01	01	PS-RFCDTYP	N
PS	407	14	0049	03	03	PS-AN-METH	N
PS	408	42	0052	05	05	PS-LAB-ID	N
PS	409	17	0056	04	05	PS-D-ANRSL	N
PS	410	21	0063	01	01	PS-D-ANDEC	N
PS	411	22	0064	06	05	PS-D-ANDTE	N
PS	412	23	0069	04	04	PS-S-HIRSL	N
PS	413	27	0073	01	01	PS-S-HIDEC	N
PS	414	28	0074	04	04	PS-S-LORSL	N
PS	415	32	0078	01	01	PS-S-LODEC	N
PS	416	33	0079	04	04	PS-S-MNRSL	N
PS	417	37	0083	01	01	PS-S-MNDEC	N
PS	418	17	0084	03	03	PS-REQ-SPL	N
PS	419	20	0087	03	03	PS-ACT-SPL	N
PS	420	49	0090	06	05	PS-PRD-STR	N
PS	421	55	0095	06	05	PS-PRD-END	N
PS	422	73	0118	01	01	PS-CHK-FED	N
PS	423	74	0119	01	01	PS-CHK-STA	N
PS	424	75	0120	03	03	PS-CHK-NUM	N
PS	425	38	0129	04	04	PS-FED-VIO	N
PS	426	42	0133	04	04	PS-STA-VIO	N
PS	427	46	0137	03	03	PS-VIO-DUR	N
PS	428	78	0140	01	01	PS-NOTIPUB	N
PS	429	79	0141	01	01	PS-NOTISTA	N
PS	817	08	0008	02	02	PS-TRAN-CD	N
PS	818	00	0142	00	01	PS-ERR-IND	N
PS	819	00	0057	00	01	PS-LB-OWN	N
PS	900	61	0017	01	01	PS-SMPLTP	N
PS	901	62	0018	06	05	PS-SMPLDT	N
PS	902	68	0052	05	05	PS-LB-ID	N

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Model State Information System
Standard Processing Subsystem

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MSI0030                                    DATA ELEMENT TABLE                                        PAGE    1
DATE 05/11/77

                               RECORD INFORMATION                                 NAME INFORMATION
                                    START POSITION          FIELD LENGTH
   FILE ID    CATALOGUE NO       TRANSACTION / FILE      TRANSACTION / FILE        MNEMONIC NAME              HISTORY CODE

     PW           145               01         0001          07        07           PW-ID                          N
     PW           146               10         0008          30        30           PW-OWNA                        Y
     PW           147               40         0038          30        30           PW-PL-STRT                     Y
     PW           148               10         0068          30        30           PW-PL-CITY                     Y
     PW           149               40         0098          02        02           PW-PL-STAT                     Y
     PW           150               42         0100          05        05           PW-PL-ZIP                      Y
     PW           151               10         0105          30        30           PW-MA-NAME                     Y
     PW           152               40         0135          30        30           PW-MA-STRT                     Y
     PW           153               10         0165          30        30           PW-MA-CITY                     Y
     PW           154               40         0195          02        02           PW-MA-STAT                     Y
     PW           155               42         0197          05        05           PW-MA-ZIP                      Y
     PW           156               47         0202          03        03           PW-MA-ARCD                     Y
     PW           157               50         0205          07        07           PW-MA-PNUM                     Y
     PW           158               10         0212          15        15           PW-PL-ACTV                     N
     PW           159               25         0227          03        03           PW-PL-ACNT                     N
     PW           160               28         0230          03        03           PW-PL-RESR                     N
     PW           161               31         0233          01        01           PW-PL-RESI                     N
     PW           162               32         0234          01        01           PW-PL-COMP                     N
     PW           163               33         0235          01        01           PW-PL-RECR                     N
     PW           164               34         0236          01        01           PW-PL-MOHO                     N
     PW           165               35         0237          01        01           PW-PL-INST                     N
     PW           166               36         0238          01        01           PW-PL-SCHL                     N
     PW           167               37         0239          01        01           PW-PL-MOTL                     N
     PW           168               38         0240          01        01           PW-PL-REST                     N
     PW           169               39         0241          01        01           PW-PL-SSTA                     N
     PW           170               40         0242          01        01           PW-PL-CAMP                     N
     PW           171               41         0243          01        01           PW-PL-PIC                      N
     PW           172               42         0244          01        01           PW-PL-LODG                     N
     PW           173               43         0245          01        01           PW-PL-MARI                     N
     PW           174               44         0246          01        01           PW-PL-SKI                      N
     PW           175               45         0247          01        01           PW-PL-BATH                     N
     PW           176               46         0248          01        01           PW-PL-VCTR                     N
     PW           177               47         0249          01        01           PW-PL-HWY                      N
     PW           178               48         0250          01        01           PW-PL-AIR                      N
     PW           179               49         0251          01        01           PW-PL-OTHR                     N
     PW           180               10         0252          07        07           PW-PL-CNUM                     Y
     PW           181               17         0259          01        01           PW-PL-CARR                     Y
     PW           182               18         0260          01        01           PW-PL-TYPE                     N
     PW           183               19         0261          09        09           PW-PL-POPL                     Y
     PW           184               28         0270          07        07           PW-PL-SNUM                     Y
     PW           185               35         0277          07        07           PW-PL-MNUM                     Y
     PW           186               10         0284          10        10           PW-PL-AVPR                     Y
     PW           187               20         0294          10        10           PW-PL-DECA                     N
     PW           188               30         0304          10        10           PW-PL-EMER                     Y
     PW           189               40         0314          10        10           PW-PL-STCA                     Y
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MSI0030                                  MODEL STATE INFORMATION SYSTEM
                                         STANDARD PROCESSING SUBSYSTEM
DATE 05/11/77
                                              DATA ELEMENT TABLE                                          PAGE    2

                                RECORD INFORMATION                                    NAME INFORMATION
                                     START POSITION            FIELD LENGTH
         FILE ID   CATALOGUE NO   TRANSACTION / FILE       TRANSACTION / FILE        MNEMONIC NAME            HISTORY CODE

           PM          190             50       0324          10       10            PM-PL-MAXP                  Y
           PM          191             10       0334          04       04            PM-PL-REGN                  Y
           PM          192             14       0338          06       05            PM-PL-SURV                  Y
           PM          193             20       0343          02       02            PM-PL-CYCL                  N
           PM          194             22       0345          01       01            PM-PL-ACTV                  N
           PM          195             23       0346          06       05            PM-PL-DDAT                  N
           PM          196             29       0351          01       01            PM-PL-DREA                  N
           PM          197             30       0352          12       12            PM-PL-MANU                  N
           PM          198             10       0364          02       02            PM-S-CODE                   Y
           PM          199             12       0366          01       01            PM-S-REGE                   N
           PM          200             13       0367          02       02            PM-S-REGN                   N
           PM          201             15       0369          02       02            PM-S-DIST                   N
           PM          202             17       0371          01       01            PM-S-BFLG                   Y
           PM          203             18       0372          01       01            PM-S-MONT                   N
           PM          204             19       0373          03       03            PM-S-NSAM                   N
           PM          205             22       0376          04       04            PM-S-SAGN                   N
           PM          206             26       0380          04       04            PM-S-SEND                   N
           PM          207             30       0384          01       01            PM-S-MACK                   N
           PM          208             31       0385          03       03            PM-S-NSPFD                  N
           PM          209             34       0388          01       01            PM-S-HCKS                   N
           PM          210             35       0389          02       02            PM-S-CLOR                   N
           PM          211             37       0391          01       01            PM-S-TFLG                   Y
           PM          212             38       0392          02       02            PM-S-TBUN                   N
           PM          213             11       ****          04       04            PM-S-COMID                  Y
           PM          214             15       ****          03       03            PM-S-SPFD                   Y
           PM          215             10       0422          04       04            PM-S-ORBGN                  N
           PM          216             14       0426          04       04            PM-S-OREND                  N
           PM          217             19       0430          03       03            PM-S-ATEM                   N
           PM          218             22       0433          04       04            PM-S-NITR                   N
           PM          219             26       0437          01       01            PM-S-RFLG                   Y
           PM          220             27       0438          01       01            PM-S-RMON                   N
           PM          221             28       0439          02       02            PM-S-BETA                   N
           PM          222             30       0441          01       01            PM-S-NUCL                   N
           PM          223             31       0442          01       01            PM-S-FATY1                  N
           PM          224             12       ****          04       04            PM-S-FACON                  N
           PM          225             16       ****          02       02            PM-S-CPRED                  N
           PM          226             10       0504          02       02            PM-S-GALP                   N
           PM          227             12       0506          02       02            PM-S-RADM                   N
           PM          228             14       0508          01       01            PM-S-NUMSP                  N
           PM          229             18       0509          01       01            PM-S-GWATR                  N
           PM          230             15       0510          01       01            PM-S-RREG                   N
           PM          231             16       0511          04       04            PM-S-LAST                   Y
           PM          232             20       0515          01       01            PM-S-ENGH                   N
           PM          233             00       0516          00       17            PM-S-RESV                   N
           PM          234             00       0616          00       05            PM-LST-UP                   N
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MSI8030                                  MODEL STATE INFORMATION SYSTEM
                                         STANDARD PROCESSING SUBSYSTEM
DATE 05/11/77
                                              DATA ELEMENT TABLE                                         PAGE     3

                                 RECORD INFORMATION                                       NAME INFORMATION
                                     START POSITION           FIELD LENGTH
          FILE ID   CATALOGUE NO   TRANSACTION / FILE      TRANSACTION / FILE            MNEMONIC NAME                HISTORY CODE

            PW          235             11      ****           05        05             PW-LA-ID                        N
            PW          236             16      ****           01        01             PW-LA-CFLG                      Y
            PW          237             47      0651           01        01             PW-OW-TYPE                      Y
            PW          238             11      ****           04        04             PW-VE-CTAN                      N
            PW          239             15      ****           05        05             PW-VE-MCL                       N
            PW          240             20      ****           01        01             PW-VE-DEC                       N
            PW          241             21      ****           03        03             PW-VE-AMF                       N
            PW          242             00      0705           00        02             PW-PL-SONM                      N
            PW          243             12      ****           15        15             PW-PL-SONA                      Y
            PW          244             27      ****           01        01             PW-PL-SOCO                      Y
            PW          245             28      ****           02        02             PW-PL-WELL                      Y
            PW          246             30      ****           01        01             PW-PL-AVAL                      Y
            PW          247             31      ****           04        04             PW-PL-BASN                      Y
            PW          248             35      ****           07        07             PW-PL-LATI                      Y
            PW          249             42      ****           07        07             PW-PL-LONG                      Y
            PW          250             49      ****           07        07             PW-PL-ALTD                      Y
            PW          251             56      ****           01        01             PW-PL-AERA                      Y
            PW          252             57      ****           01        01             PW-PL-PREC                      Y
            PW          253             58      ****           01        01             PW-PL-COAG                      Y
            PW          254             59      ****           01        01             PW-PL-SEDI                      Y
            PW          255             60      ****           01        01             PW-PL-FILT                      Y
            PW          256             61      ****           01        01             PW-PL-CORR                      Y
            PW          257             62      ****           01        01             PW-PL-SOFT                      Y
            PW          258             63      ****           01        01             PW-PL-TAST                      Y
            PW          259             64      ****           01        01             PW-PL-IRON                      Y
            PW          260             65      ****           01        01             PW-PL-AMMO                      Y
            PW          261             66      ****           01        01             PW-PL-FLOR                      Y
            PW          262             67      ****           01        01             PW-PL-DISI                      Y
            PW          263             68      ****           01        01             PW-PL-OTHE                      Y
            PW          264             00      ****           00        03             PW-PL-RESE                      Y
            PW          701             42      0704           01        01             PW-PL-COIN                      N
            PW          702             32      0443           01        01             PW-S-FATY2                      N
            PW          906             08      ****           02        02             PW-TRAN-CD                      N
            PW          910             10      ****           01        01             PW-CRDT-CD                      N
            PW          912             10      ****           01        01             PW-OCCUR1                       N
            PW          913             10      ****           02        02             PW-OCCUR2                       N
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MSI0030                                  MODEL STATE INFORMATION SYSTEM
                                         STANDARD PROCESSING SUBSYSTEM
DATE 05/11/77
                                              DATA ELEMENT TABLE                                        PAGE     1

                              RECORD INFORMATION                                  NAME INFORMATION
                                    START POSITION          FIELD LENGTH
       FILE ID    CATALOGUE NO   TRANSACTION / FILE     TRANSACTION / FILE         MNEMONIC NAME           HISTORY CODE

         RG           001             01     0001          04        04           RG-CONID                    N
         RG           002             05     0005          02        02           RG-A-RGLVL                  N
         RG           003             07     0007          11        15           RG-A-CONAM                  N
         RG           004             18     0022          06        05           RG-A-EFFDT                  N
         RG           005             24     0027          03        03           RG-A-M-GRA                  N
         RG           006             27     0030          03        03           RG-A-M-CHR                  N
         RG           007             30     0033          03        03           RG-A-SADRS                  N
         RG           008             33     0036          03        03           RG-A-SAIRS                  N
         RG           009             36     0039          03        03           RG-A-R&FRS                  N
         RG           010             39     0042          03        03           RG-A-R&ANM                  N
         RG           011             42     0045          01        01           RG-A-NUMSP                  N
         RG           012             43     0046          01        01           RG-A-MINFO                  N
         RG           013             44     0047          02        02           RG-A-INIPD                  N
         RG           014             46     0049          02        02           RG-A-FRACT                  N
         RG           015             48     0051          02        02           RG-A-MINVF                  N
         RG           016             50     0053          01        01           RG-A-ACSBP                  N
         RG           017             51     0054          01        01           RG-A-CNCOB                  N
         RG           019             05     0005          02        02           RG-B-RGLVL                  N
         RG           020             07     0007          10        15           RG-B-CONAM                  N
         RG           021             17     0022          06        05           RG-B-EFFDT                  N
         RG           022             23     0027          02        02           RG-B-ANMCL                  N
         RG           023             25     0029          05        05           RG-B-TRIBC                  N
         RG           024             30     0034          03        03           RG-B-STRBC                  N
         RG           025             33     0037          03        03           RG-B-MRENN                  N
         RG           026             36     0040          03        03           RG-B-MRECN                  N
         RG           027             39     0043          03        03           RG-B-SACIC                  N
         RG           028             42     0046          01        01           RG-B-CNCOB                  N
         RG           029             43     0047          01        01           RG-B-MOMQD                  N
         RG           030             44     0048          01        01           RG-B-AVCOM                  N
         RG           031             45     0049          06        06           RG-B-NNPOP                  N
         RG           032             51     0055          01        01           RG-B-NNMSP                  N
         RG           033             52     0056          01        01           RG-B-NNMFO                  N
         RG           034             53     0057          02        02           RG-B-NVMFO                  N
         RG           035             55     0059          02        02           RG-B-CNIOS                  N
         RG           036             57     0061          02        02           RG-B-CNSTS                  N
         RG           037             59     0063          02        02           RG-B-CIOMF                  N
         RG           038             61     0065          02        02           RG-B-CSTMF                  N
         RG           039             63     0067          02        02           RG-B-CVMFO                  N
         RG           040             65     0069          02        02           RG-B-CTOSP                  N
         RG           042             05     0005          02        02           RG-C-RGLVL                  N
         RG           043             07     0007          11        15           RG-C-CONAM                  N
         RG           044             18     0022          01        01           RG-C-RSNCD                  N
         RG           045             19     0023          06        06           RG-C-MCLUN                  N
         RG           046             25     0029          06        06           RG-C-MCL                    N
         RG           047             31     0035          01        01           RG-C-MCLOC                  N
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MBI803P                                 MODEL STATE INFORMATION SYSTEM
                                        STANDARD PROCESSING SUBSYSTEM
DATE 05/11/77                                 DATA ELEMENT TABLE                                  PAGE    8

                          RECORD INFORMATION                                   NAME INFORMATION
                                  START POSITION         FIELD LENGTH
   FILE ID    CATALOGUE NO    TRANSACTION / FILE    TRANSACTION / FILE        MNEMONIC NAME            HISTORY CODE

     RG           048              32      0036         05        05           RG-C-MCLMN                    N
     RG           049              37      0041         01        01           RG-C-MCLOD                    N
     RG           050              38      0042         05        05           RG-C-MCLMI                    N
     RG           051              43      0047         01        01           RG-C-MCLMD                    N
     RG           052              44      0048         01        01           RG-C-CKSAM                    N
     RG           053              45      0049         01        01           RG-C-BEACD                    N
     RG           054              46      0050         01        01           RG-C-BPECD                    N
     RG           055              47      0051         02        02           RG-C-MINTM                    N
     RG           056              49      0053         02        02           RG-C-CHMPD                    N
     RG           057              51      0055         06        05           RG-C-CFFDT                    N
     RG           058              57      0060         01        01           RG-C-CGRYR                    N
     RG           059              58      0061         04        04           RG-C-CGBPF                    N
     RG           060              62      0065         04        04           RG-C-CGVFO                    N
     RG           061              66      0069         02        02           RG-C-CGMNG                    N
     RG           062              68      0071         01        01           RG-C-CBRYR                    N
     RG           063              69      0072         04        04           RG-C-CBBPF                    N
     RG           064              73      0076         04        04           RG-C-CBVFO                    N
     RG           065              77      0080         02        02           RG-C-CBMNG                    N
     RG           066              51      0082         06        05           RG-C-NEFDT                    N
     RG           067              57      0087         01        01           RG-C-NGRYR                    N
     RG           068              58      0088         04        04           RG-C-NGBPF                    N
     RG           069              62      0092         04        04           RG-C-NGVFO                    N
     RG           070              66      0096         02        02           RG-C-NGMNG                    N
     RG           071              68      0098         01        01           RG-C-NBRYR                    N
     RG           072              69      0099         04        04           RG-C-NBBPF                    N
     RG           073              73      0103         04        04           RG-C-NBVFO                    N
     RG           074              77      0107         02        02           RG-C-NBMNG                    N
     RG           076              05      0005         02        02           RG-E-RGLVL                    N
     RG           077              07      0007         01        01           RG-E-TALID                    N
     RG           078              08      0008         06        05           RG-E-EFFDT                    N
     RG           079              14      0013         15        15           RG-E-CONAM                    N
     RG           080              29      0028         06        06           RG-E-ANCON                    N
     RG           081              35      0034         04        04           RG-E-DETLM                    N
     RG           082              39      0038         05        01           RG-E-NPPCD                    N
     RG           084              05      0005         02        02           RG-F-RGLVL                    N
     RG           085              07      0007         01        01           RG-F-TALID                    N
     RG           086              08      0008         03        03           RG-F-TRFLO                    N
     RG           087              11      0011         03        03           RG-F-TRFHI                    N
     RG           088              14      0014         03        03           RG-F-TRCLO                    N
     RG           089              17      0017         03        03           RG-F-TRCHI                    N
     RG           090              20      0020         06        06           RG-F-TRMCL                    N
     RG           091              26      0026         03        03           RG-F-RRFLO                    N
     RG           092              29      0029         03        03           RG-F-RRFHI                    N
     RG           093              32      0032         03        03           RG-F-RRCLO                    N
     RG           094              35      0035         03        03           RG-F-RRCHI                    N
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MSI8030                                   MODEL STATE INFORMATION SYSTEM
                                          STANDARD PROCESSING SUBSYSTEM
DATE 05/11/77                                   DATA ELEMENT TABLE                                      PAGE    3

                           RECORD INFORMATION                               NAME INFORMATION
                              START POSITION          FIELD LENGTH
      FILE ID   CATALOGUE NO  TRANSACTION / FILE    TRANSACTION / FILE      MNEMONIC NAME        HISTORY CODE

        RG         096           05       0005        02       02          RG-M-RGLVL                N
        RG         097           07       0007        08       15          RG-M-CONAM                N
        RG         098           15       0022        06       05          RG-M-EFFDT                N
        RG         099           21       0027        02       02          RG-M-MF-BM                N
        RG         100           23       0029        02       02          RG-M-MF-MT                N
        RG         101           25       0031        02       02          RG-M-MF-PB                N
        RG         102           27       0033        02       02          RG-M-MF-MR                N
        RG         103           29       0035        02       02          RG-M-MF-MC                N
        RG         104           31       0037        02       02          RG-M-FT-BM                N
        RG         105           33       0039        02       02          RG-M-FT-MT                N
        RG         106           35       0041        02       02          RG-M-FT-PB                N
        RG         107           37       0043        02       02          RG-M-FT-MR                N
        RG         108           39       0045        02       02          RG-M-FT-MC                N
        RG         109           41       0047        02       02          RG-M-FH-BM                N
        RG         110           43       0049        02       02          RG-M-FH-MT                N
        RG         111           45       0051        02       02          RG-M-FH-PB                N
        RG         112           47       0053        02       02          RG-M-FH-MR                N
        RG         113           49       0055        02       02          RG-M-FH-MC                N
        RG         114           51       0057        01       01          RG-M-RQMAX                N
        RG         115           52       0058        01       01          RG-M-RQSPD                N
        RG         116           53       0059        01       01          RG-M-CKCDB                N
        RG         117           54       0060        01       01          RG-M-CKMMP                N
        RG         118           55       0061        02       02          RG-M-CKMCB                N
        RG         119           57       0063        02       02          RG-M-C-LEU                N
        RG         120           59       0065        02       02          RG-M-C-MXP                N
        RG         121           61       0067        02       02          RG-M-C-MCL                N
        RG         122           63       0069        02       02          RG-M-C-MXT                N
        RG         123           65       0071        06       05          RG-M-NEFDT                N
        RG         124           71       0076        01       01          RG-M-NSEAB                N
        RG         125           72       0077        01       01          RG-M-NPERD                N
        RG         126           73       0078        02       02          RG-M-NSPFQ                N
        RG         128           05       0005        02       02          RG-P-RGLVL                N
        RG         129           07       0007        01       01          RG-P-TALID                N
        RG         130           08       0008        09       09          RG-P-T-FRM                N
        RG         131           17       0017        09       09          RG-P-T-TOP                N
        RG         132           26       0026        03       03          RG-P-T-FRQ                N
        RG         134           05       0005        02       02          RG-T-RGLVL                N
        RG         135           07       0007        09       15          RG-T-CONAM                N
        RG         136           16       0022        02       02          RG-T-MOMCL                N
        RG         137           18       0024        02       02          RG-T-CMMCL                N
        RG         138           20       0026        02       02          RG-T-CNSPL                N
        RG         139           22       0028        06       05          RG-T-EFFDT                N
        RG         140           28       0033        01       01          RG-T-ALLBR                N
        RG         141           29       0034        01       01          RG-T-RPTIN                N
        RG         142           30       0035        03       03          RG-T-CSPFQ                N
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MSID030                                        MODEL STATE INFORMATION SYSTEM
                                               STANDARD PROCESSING SUBSYSTEM
DATE 05/11/77
                                                     DATA ELEMENT TABLE                                                        PAGE     8

                                        RECORD INFORMATION                                        NAME INFORMATION
                                          START POSITION            FIELD LENGTH
                FILE ID    CATALOGUE NO   TRANSACTION / FILE    TRANSACTION / FILE          MNEMONIC NAME                  HISTORY CODE

                  RG           143            33      0038          03        03              RG-T-NSPPR                        N
                  RG           144            36      0041          02        02              RG-T-MRBPL                        N
                  RG           914            79      ****          02        02              TRAN-CODE                         N
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MSI003D                          MODEL STATE INFORMATION SYSTEM
                                 STANDARD PROCESSING SUBSYSTEM
DATE 05/11/77                         DATA ELEMENT TABLE                                   PAGE    1

                         RECORD INFORMATION                             NAME INFORMATION
                               START POSITION        FIELD LENGTH
         FILE ID  CATALOGUE NO  TRANSACTION / FILE   TRANSACTION / FILE   MNEMONIC NAME       HISTORY CODE

           SA         356          01      0001         07      07       SA-PWS-ID                N
           SA         357          10      0010         04      04       SA-CONID                 N
           SA         358          00      0014         00      03       SA-SAMPLID               N
           SA         359          00      0017         00      01       SA-SAMPLTP               N
           SA         360          00      0018         00      05       SA-SAMPLDT               N
           SA         361          00      0023         00      04       SA-SAMPLTM               N
           SA         362          17      0027         10      10       SA-SAMPLKY               N
           SA         363          00      0037         00      01       SA-RECDTYP               N
           SA         364          00      0038         01      01       SA-PWS-TYP               N
           SA         365          00      0039         00      09       SA-POP-SRV               N
           SA         366          00      0048         00      01       SA-SOURCE                N
           SA         367          14      0049         03      03       SA-AN-METH               N
           SA         368          00      0052         00      05       SA-LAB-ID                N
           SA         369          00      0057         00      01       SA-LAB-OWN               N
           SA         370          00      0058         00      05       SA-D-ANRSL               N
           SA         371          00      0063         00      01       SA-D-ANDEC               N
           SA         372          00      0064         00      05       SA-D-ANDTE               N
           SA         373          00      0069         00      04       SA-S-HIRSL               N
           SA         374          00      0073         00      01       SA-S-HIDEC               N
           SA         375          00      0074         00      04       SA-S-LORSL               N
           SA         376          00      0078         00      01       SA-S-LODEC               N
           SA         377          00      0079         00      04       SA-S-MNRSL               N
           SA         378          00      0083         00      01       SA-S-MNDEC               N
           SA         379          00      0084         00      03       SA-REQ-SPL               N
           SA         380          00      0087         00      03       SA-ACT-SPL               N
           SA         381          00      0090         00      05       SA-PRD-STR               N
           SA         382          00      0095         00      05       SA-PRD-END               N
           SA         383          00      0100         00      05       SA-RGLRSPL               N
           SA         384          00      0105         00      05       SA-SAMPLCT               N
           SA         385          00      0110         00      05       SA-SAMPLDU               N
           SA         386          00      0115         00      03       SA-AIR-TMP               N
           SA         387          00      0118         00      01       SA-CHK-FED               N
           SA         388          00      0119         00      01       SA-CHK-STA               N
           SA         389          00      0120         00      03       SA-CHK-NUM               N
           SA         390          00      0123         00      05       SA-VAR-MCL               N
           SA         391          00      0128         00      01       SA-VAR-DEC               N
           SA         392          00      0129         00      04       SA-FED-VIO               N
           SA         393          00      0133         00      04       SA-STA-VIO               N
           SA         394          00      0137         00      03       SA-VIO-DUR               N
           SA         395          00      0140         00      01       SA-NOTIPUB               N
           SA         396          00      0141         00      01       SA-NOTISTA               N
           SA         397          00      0143         00      01       SA-MCLVIFL               N
           SA         398          00      0144         00      05       SA-MCLVFVL               N
           SA         407          00      0144         00      02       SA-REGION                N
           SA         408          00      0146         00      02       SA-DISTRIC               N
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MSI8030                              MODEL STATE INFORMATION SYSTEM
                                     STANDARD PROCESSING SUBSYSTEM
DATE 05/11/77
                                          DATA ELEMENT TABLE                                        PAGE    8

                          RECORD INFORMATION                                  NAME INFORMATION
                                  START POSITION         FIELD LENGTH
         FILE ID   CATALOGUE NO   TRANSACTION / FILE   TRANSACTION / FILE     MNEMONIC NAME          HISTORY CODE

           SA          009             00      0199       00      01          SA-MCLVFDC                  N
           SA          010             00      0200       00      05          SA-MCLVSVL                  N
           SA          011             00      0205       00      01          SA-MCLVSDC                  N
           SA          012             00      0206       00      05          SA-MCLVSSD                  N
           SA          013             00      0211       00      01          SA-FL-FUFC                  N
           SA          014             00      0212       00      01          SA-FL-SUFC                  N
           SA          015             00      0213       00      01          SA-F-SSC                    N
           SA          016             00      0214       00      01          SA-S-SSC                    N
           SA          017             00      ****       02      02          SA-TRAN-CD                  N
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MSI8030                                   MODEL STATE INFORMATION SYSTEM
                                          STANDARD PROCESSING SUBSYSTEM
DATE 05/11/77
                                              DATA ELEMENT TABLE                                          PAGE    1

                        RECORD INFORMATION                                          NAME INFORMATION
                                     START POSITION          FIELD LENGTH
         FILE ID   CATALOGUE NO   TRANSACTION / FILE     TRANSACTION / FILE        MNEMONIC NAME         HISTORY CODE

           SH          301            00       0001         00       02            SH-FILE-ID                 N
           SH          302            00       0003         00       05            SH-REC-ID                  N
           SH          303            00       0008         00       03            SH-CAT-NO                  N
           SH          304            00       0011         00       05            SH-CUR-UP                  N
           SH          305            00       0016         00       05            SH-LST-UP                  N
           SH          306            00       0021         00       30            SH-OLD-VAL                 N
           SH          307            00       0051         00       30            SH-NEW-VAL                 N
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MSI8630                                      MODEL STATE INFORMATION SYSTEM
                                             STANDARD PROCESSING SUBSYSTEM
DATE 05/11/77
                                                  DATA ELEMENT TABLE                                                 PAGE    1

                                      RECORD INFORMATION                                    NAME INFORMATION
                                         START POSITION             FIELD LENGTH
            FILE ID    CATALOGUE NO   TRANSACTION / FILE        TRANSACTION / FILE          MNEMONIC NAME           HISTORY CODE

              VE           455            01        0001            05       05             VE-ID                        Y
              VE           456            16        0006            05       05             VE-ID-REF                    Y
              VE           457            08        0011            07       07             VE-PHS-ID                    Y
              VE           458            15        0018            01       01             VE-TYPE                      Y
              VE           459            21        0019            06       05             VE-EFF-DT                    Y
              VE           460            27        0024            06       05             VE-EXP-DT                    Y
              VE           461            35        0029            01       01             VE-STATUS                    Y
              VE           462            36        0030            04       04             VE-CON-ID                    Y
              VE           463            40        0034            05       05             VE-MOD-MCL                   Y
              VE           464            45        0039            01       01             VE-MOD-DEC                   Y
              VE           465            46        0040            03       03             VE-TREAT                     Y
              VE           466            49        0043            03       03             VE-ALT-TRT                   Y
              VE           467            52        0046            03       03             VE-MOD-FRE                   Y
              VE           468            08        ****            30       30             VE-ABSTRAC                   Y
              VE           469            33        0529            02       02             VE-REASON                    Y
              VE           470            00        0531            00       05             VE-LST-UP                    Y
              VE           471            00        0536            00       02             VE-HISTONE                   Y
              VE           472            16        ****            02       02             VE-REPEAT                    Y
              VE           473            08        ****            06       05             VE-TAR-DT                    Y
              VE           474            16        ****            06       05             VE-ATT-DT                    Y
              VE           475            14        ****            02       02             VE-MIL-COD                   Y
              VE           476            22        ****            01       01             VE-DEL-CD                    Y
              VE           477            16        ****            30       30             VE-MIL-ADD                   Y
              VE           905            06        ****            02       02             VE-TRAN-CD                   N
              VE           909            08        ****            01       01             VE-CRDT-CD                   N
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MSIU036

DATE 05/11/77

MODEL STATE INFORMATION SYSTEM
STANDARD PROCESSING SUBSYSTEM

DATA ELEMENT TABLE

PAGE 1

		RECORD INFORMATION				NAME INFORMATION	
		START POSITION		FIELD LENGTH			
FILE ID	CATALOGUE NO	TRANSACTION	/ FILE	TRANSACTION	/ FILE	MNEMONIC NAME	HISTORY CODE
VI	326	08	0001	07	07	VI-PWS-ID	Y
VI	327	00	0008	00	30	VI-PWS-NAM	Y
VI	328	00	0038	00	01	VI-PWS-TYP	Y
VI	329	00	0039	00	09	VI-POPULAT	Y
VI	330	15	0048	02	02	VI-REG-LVL	Y
VI	331	17	0050	04	04	VI-CONT-ID	Y
VI	332	00	0054	00	01	VI-SRC-CD	Y
VI	333	21	0055	05	05	VI-LAB-ID	Y
VI	334	00	0060	00	30	VI-LAB-NAM	Y
VI	335	26	0090	06	05	VI-SPLDATE	Y
VI	336	32	0095	04	04	VI-SPLREQD	Y
VI	337	36	0099	04	04	VI-SPLTAKN	Y
VI	338	40	0103	03	03	VI-AN-METH	Y
VI	339	43	0106	05	05	VI-AN-RESL	Y
VI	340	48	0111	01	01	VI-AN-DEC	Y
VI	341	49	0112	06	05	VI-ANDATE	Y
VI	342	55	0117	06	05	VI-SAMPLCT	Y
VI	343	08	0122	02	02	VI-VIOL-TP	Y
VI	344	10	0124	06	05	VI-VIOL-DT	Y
VI	345	16	0129	05	05	VI-MCLVIOL	Y
VI	346	21	0134	01	01	VI-MCLDEC	Y
VI	347	22	0135	03	03	VI-SPLVIOL	Y
VI	348	25	0138	04	04	VI-NUMSPVI	Y
VI	349	29	0142	02	02	VI-VIOLDUR	Y
VI	350	31	0144	01	01	VI-NOTIPUB	Y
VI	351	32	0145	01	01	VI-NOTISTA	Y
VI	352	00	0146	00	02	VI-REGION	Y
VI	353	00	0148	00	02	VI-DISTRIC	Y
VI	354	33	0150	01	01	VI-SPLTYPE	Y
VI	355	34	0151	10	10	VI-SPLKEY	Y
VI	800	44	0161	06	05	VI-DT-RPT	Y
VI	801	50	0166	02	02	VI-LST-RPT	Y
VI	802	00	0168	00	01	VI-LAB-OWN	Y
VI	803	01	0169	05	05	VI-VIOL-ID	Y
VI	804	00	0174	00	05	VI-LSTUPDT	Y
VI	805	52	0179	25	25	VI-REMARKS	Y
VI	806	00	0204	00	05	VI-MCLVOSD	Y
VI	915	06	****	02	02	VI-TRAN-CD	N
VI	916	08	****	01	01	VI-CRDT-CD	N

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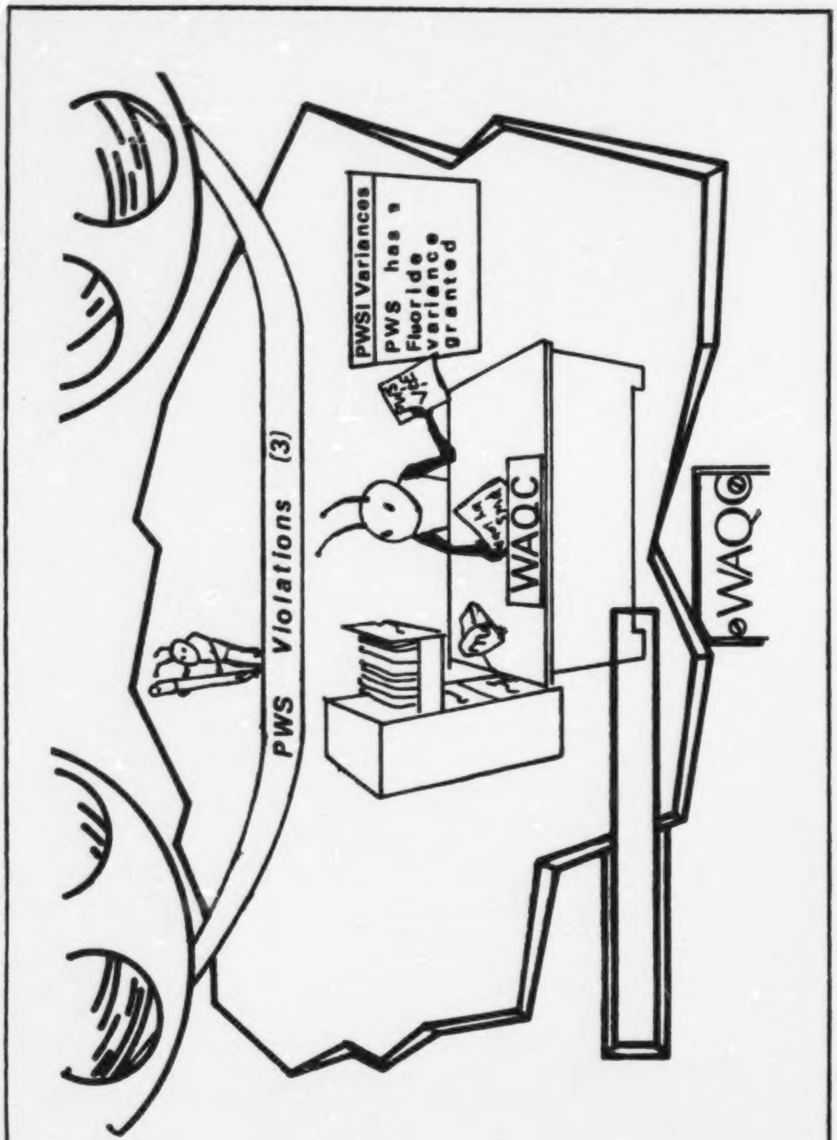
PWS Violations (3)
PWSI Variances
PWS has a Fluoride variance granted
WAQC
WAQ